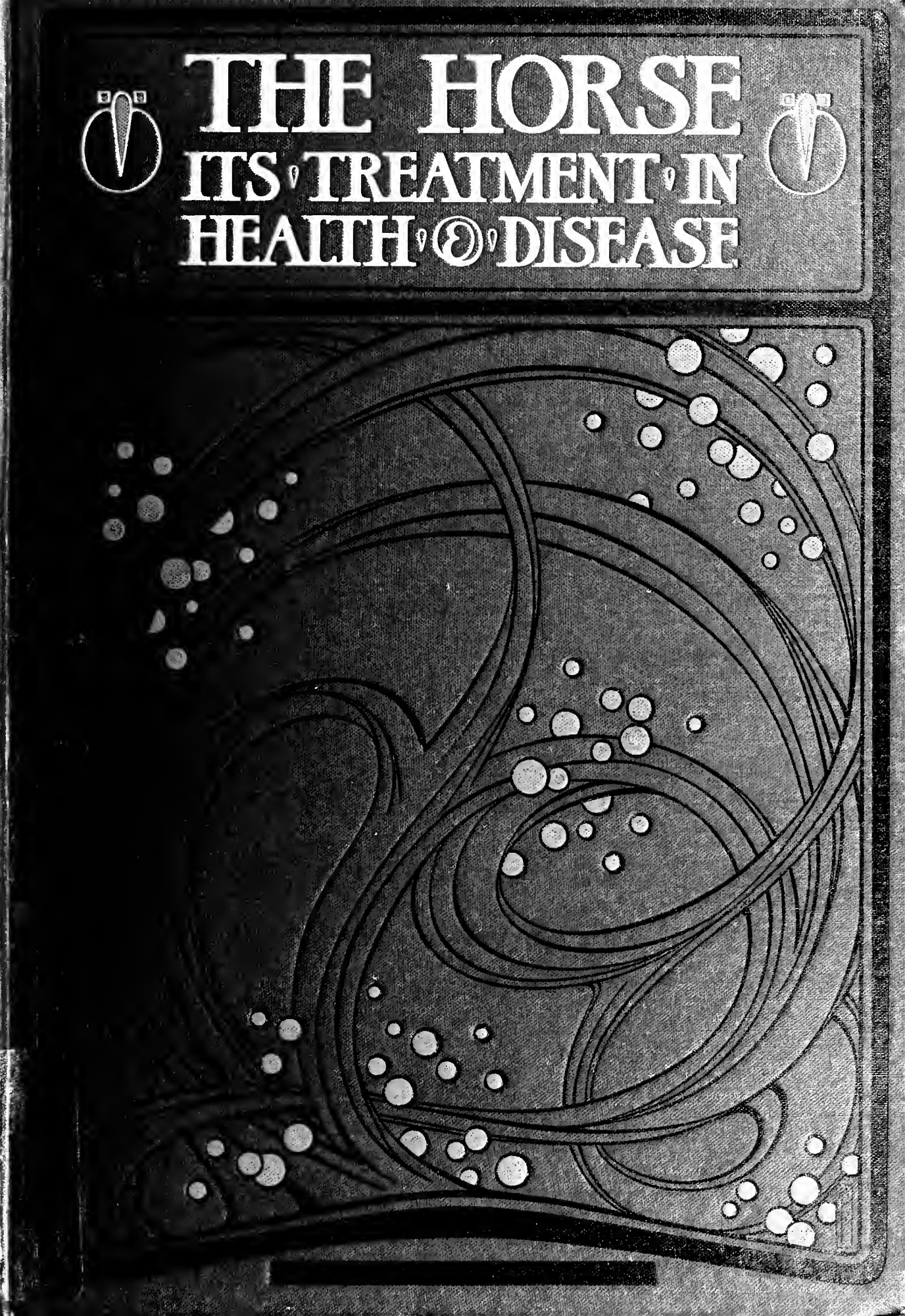
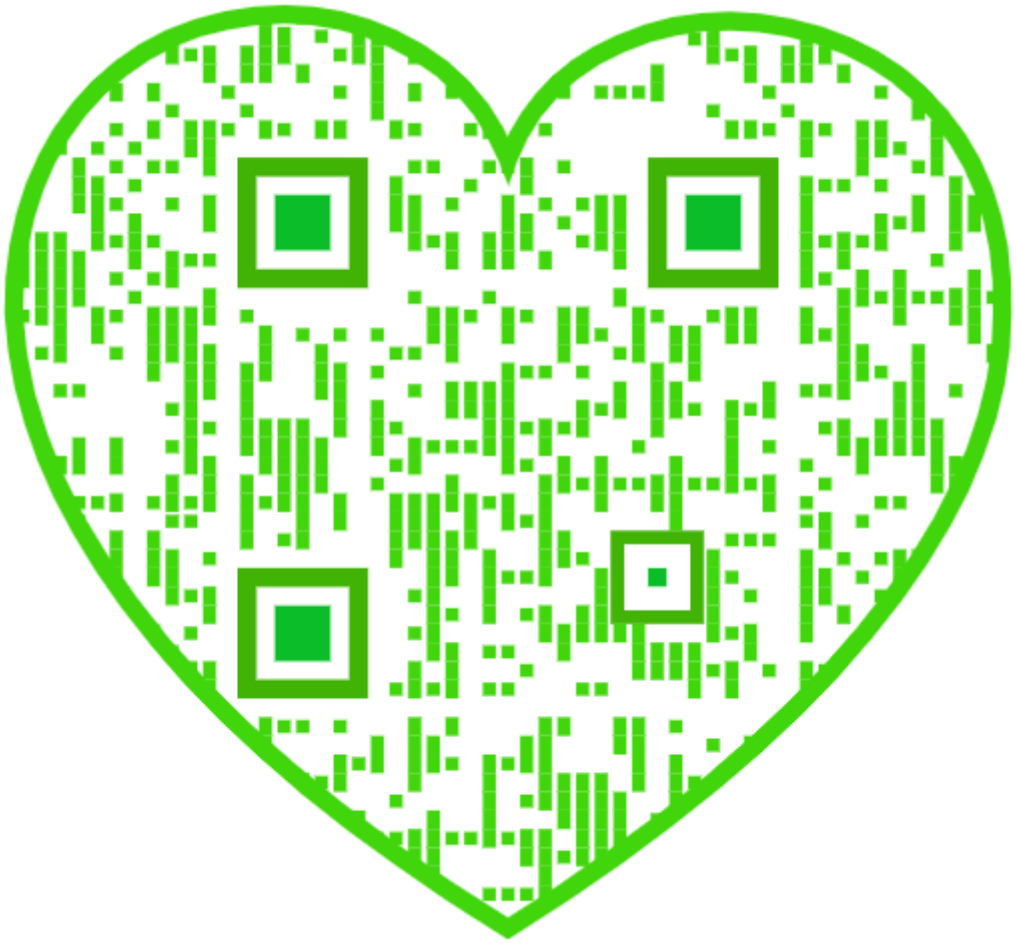
THE HORSE

ITS TREATMENT IN HEALTH & DISEASE





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THE HORSE

ITS TREATMENT IN HEALTH AND DISEASE

THOROUGHBRED STALLION, ST. SIMON

ITS TREATMENT IN HEALTH AND DISEASE

WITH A COMPLETE GUIDE TO BREEDING
TRAINING AND MANAGEMENT

Edited by

PROF. J. WORTLEY AXE, M.R.C.V.S.

Ex-President of the Royal College of Veterinary Surgeons
Late Lecturer at the Royal Veterinary College, and at the Agricultural Colleges of Dounton and Wye
Chief Veterinary Inspector to the Surrey County Council
Consulting Veterinary Surgeon to the British Dairy Farmers' Association

Author of "The Mare and Foal" "Abortion in Cattle" "Anthrax in Farm Stock"
"Examination of Horses as to Soundness" "Glanders, its Spread and Suppression" "Swine Fever"
"Lithotomy or the Removal of Stone from the Bladder of the Horse"

DIVISIONAL VOLUME I

LONDON

34 SOUTHAMPTON STREET, STRAND
1905

PREFACE

The object of the editor in preparing this work has been to set out in one compact whole some of the most useful information relating to the horse. The origin and development of the horse, his varieties, his breeding, training, and management, in health and disease, with other cognate subjects, have each in turn been considered.

To render the book more intelligible and useful to the reader, each group of diseases is preceded by a brief reference to the anatomy and physiology of the parts therein concerned, and the whole has been written in the simplest possible language consistent with a clear enunciation of the subject.

Having regard to the extent and variety of the matter to be dealt with, it was necessary to seek the co-operation of outside help, and I have much pleasure in saying how readily this was accorded by my friends Sir George Brown, C.B., Dr. Fleming, Professor Shave, Mr. Harold Leeney, Mr. Hunting, Mr. Vero Shaw, Mr. Lupton, Mr. Malcolm, and others, and how much I owe them my grateful acknowledgments.

The greatest care has been taken in the selection and production of the very large series of illustrations which will be found in this book. Of these many are in colours, embracing portraits of prize-winning animals of the leading varieties, and drawings from nature illustrating anatomical and pathological subjects. Of the large number of black-and-white illustrations many are reproductions from photographs,

many are drawn from original specimens, or reproduced from drawings in the portfolio of the Editor, while some are from the text-books of Chaveau, Kirks, and others.

To those who have allowed me the use, or favoured me with portraits, of their animals, I am duly grateful, and my best acknowledgments are due to Captain Nicholas for his kindness in allowing me to present to my readers photographs of the beautiful white horses which are used by His Most Gracious Majesty the King on state occasions.

J. WORTLEY AXE.

The Wilderness,
Pinner.

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INTRODUCTION

"Only the introduction! That may very well be passed over"—is a not uncommon exclamation from the reader, and even a more frequent unuttered impression in his mind. In opposition to this idea of the reader, the writer ventures to press the author's view of the question in the hope of being able to show that a synopsis such as the present introduction is intended to present is a very useful, indeed it might even be designated an indispensable, preparation for the study of what is to follow. Certainly it cannot be otherwise than helpful to a reader to have spread before him in one view the outline of the work to which he intends to devote his attention. No one disbelieves in the value of a plan of a building, or a map of a country, and in the present case the object is to indicate as briefly as possible, in a preliminary sketch, the chief features of the work on the Horse, so that the reader may be informed of its scope and intention at the outset.

It may be observed that the division of the literary work into sections by different writers was obviously a necessity, and the book is consequently the outcome of the knowledge and experience of a considerable number of contributors, each one of whom has been selected for his special qualifications in his own department. The object which has been carefully kept in view throughout is to fill a hiatus in the literature relating to horses, by producing a book of the horse which shall contain information on all the points which are constantly the subject of enquiry among owners of horses, and at the same time to present this information in a form which will not demand a previous study of technical or scientific works to render it intelligible to the unscientific reader. Not because in this work the teachings of science are ignored or treated in a slovenly manner, but because the method is here adopted which is happily becoming very general among scientific writers, of using plain words to express ideas, and so losing nothing of accuracy in regard to the facts of science, while gaining the great advantage of leaving no shadow of doubt to obscure the meaning.

Dealing of necessity with a multiplicity of subjects, the importance of conciseness of diction has from the first been recognized, and in arranging

the plan of the book it was impossible to ignore the fact that many books had already been written on the subjects which it was proposed to treat in a single volume. The subsequent pages indicate that the chief existing works on the horse have been consulted and the value of their teachings acknowledged. But the promoters of the present work had before them the constantly-repeated request for a treatise on the horse which should meet the requirements of a large class of readers whose time and patience are limited, and who are not disposed to undertake the task of wading through a small library of books in order to get the information which they want.

In this connection we may recall a story told of an Eastern potentate who determined to acquire something of all the knowledge which was extant. His learned men accordingly made a vast collection of the most advanced works which the world contained. The king, staggered at the sight of the accumulated books, demanded if it were not possible to reduce the contained wisdom of the volumes to a smaller compass. The learned men agreed that it might be done, and the command was given to proceed with the work.

Laborious attention to the business before them enabled the philosophers to submit to the monarch a few volumes which they assured him contained an epitome of all that was really true of the sciences in the world. The monarch essayed to study the new tomes, but soon became wearied. Another command then went forth to prepare one book in which all the knowledge should be represented as far as it was real. This also was done at the king's order with no better result than the issue of a final mandate to the wise men to formulate a single word in which the science of the universe should be expressed. Wisdom was justified of her children in this case at least. In a moment of inspiration the learned men saved their reputations and their lives by giving his majesty the one word "Perhaps!" How perfectly the two short syllables conveyed to the wise men their estimate of the scientific works which they had had to study and condense, only themselves could say. How far the word might be applied to much that has been written since let the masters of modern science tell us if they will, and it remains for the reader to decide how much of the Eastern monarch's craving for the mere results, without the necessity of following the steps in the process, mental or physical, by which they were obtained, still remains in the world. The present authors do not promise to epitomize by the summary method of the Wise Men of the East, but they venture to claim that they have succeeded in compressing a large amount of valuable information within limits which could not be contracted without the omission of facts that could not well be spared.

The history of the horse begins, as seems fitting, with an account of the animal's origin in prehistoric times from ancestors which differed greatly in form and habit from the horse of to-day, but possessed special characters which entitled them to the name of horse-like animals, characters which became more marked age after age until they culminated in the appearance of the horse as it now exists.

Many collateral subjects had to be considered in connection with the evolution of the horse—embryology, geology, and palæontology, all had to be laid under contribution, so far only, however, as was essential to the argument. In fairness to the reader, who is not asked to believe more than is capable of proof, it was deemed necessary to show that what is called the "theory of evolution" in reality represents a fact in nature, a process which is always and everywhere going on, and is exhibited in an intelligible form in the development of the ovum in the higher mammalia as in the lowest forms of life. The fossils of what is known as the Tertiary formation furnish among other things a consistent record of the evolution of the horse, with hardly a gap, certainly without one of sufficient extent to lessen the value of the facts on which naturalists have based their conclusions. As leading up to the evidence which geology furnishes, it was essential to devote some notice to special organs and parts in the anatomy of the horse, on account of certain features they present suggesting that they must at some remote period have existed in a more developed form and possessed important functions which, owing to changes in conditions under which the animal lives, they have gradually ceased to perform. Among the structures that the horse possesses, but for which no present use can be found, the most conspicuous are the horny growths on the insides of the legs, above the knees and below the hocks, and also at the back of the fetlock joints. These "corns", "callosities", or "chestnuts" and "ergots" as they are variously called, have always attracted attention and excited curiosity, and it was thought desirable to make a special investigation in reference to their structure. The description and the illustrations which are given will leave no doubt in the mind of the reader that whatever may have been their original function, and whether they occur in the form of distinct protuberances (as in the horse) or merely as "bare patches" (as in the ass), they are true horn. Whether or not they represent vanished *digits* (or toes) is a question which is to some extent answered, but the reply leaves a lingering doubt in the mind.

From the horse of the remote past, the horse known only by its fossil remains, to the creature of to-day the change is not very marked, and to the scientist, indeed, is hardly perceptible. When we deal with more recent periods, the varieties of the horse of historic times, and the first historical

notice of the animal under some kind of domestication, form an interesting chapter, in which many important facts not unclouded by tradition are introduced to the notice of the reader.

In connection with the History of the Horse, our heavy and light breeds, our Shire horses, Clydesdales, Suffolks, and Cleveland bays, our racers, hunters, hacks, and ponies all receive due notice in regard to their origin, specialities of form, and qualities.

The chapters dealing with the external points of the horse and the general subject of its conformation, its excellences and its defects, cannot fail to interest the practical horseman. Room for differences of opinion exists in questions of form and quality, as the awards of our judges at exhibitions of live-stock prove; but there are canons to be remembered, to infringe which would bring down thunders of animadversion from the orthodox horseman. Outside these fundamental maxims, however, much liberty is permitted. Every horseman knows something of the standards of form, some know a good deal, and all are concerned to know whatever is to be learned on the subject.

Principles of breeding and the management of breeding stock, including the different systems of training for the turf, the chase, and the show-yard, constitute a chapter in our book of the horse which will be read with interest by all lovers of the animal, whatever may be the sphere of work in which it is employed. There is perhaps no enquiry more constantly advanced than that for information regarding the management and training of animals and the diseases to which they are subject, and the stereotyped reply to the enquiry always and truly has been hitherto that there is no single book in which all these matters are dealt with. Stable architecture and stable fittings are also important matters, in regard, for instance, to aspect, means of ventilation, and sanitary arrangements in general. Indeed, such questions cannot be estimated as anything less than vital to the well-being of animals which are confined for a large portion of every day and night within a box or stall; and even the possessor of a pony is interested in knowing the common details of stable life, of which a large proportion of owners of horses are ignorant, and thus become subservient to their servants. How much fodder, litter, water, air, and exercise a horse requires are points of practice about which no material difference of opinion exists, but the man who does not know is often afraid to ask even of a friend, and must not, for his reputation's sake, enquire of his groom on such elementary matters. All such details are given in the present work.

Veterinary hygiene or sanitary science as applied to the horse has a chapter to itself, with the object of bringing to a focus all the scattered rays of knowledge on the subject, which are often too diffused to be of

much practical value. Starting with a healthy animal, free from hereditary taint, sanitary science claims to know how to keep it healthy, and the claim may be admitted to be reasonable. At any rate failure can be shown to be due not to want of knowledge on the part of the sanitarian, but to the existence of obstacles which render that knowledge inapplicable; and there does occur not unfrequently an unsatisfactory combination of surroundings in which, although it is quite easy to see what to do, the fact has to be recognized that it is impossible to do it.

Hygiene, dealing with the laws of health, forms a natural introduction to its antithesis—pathology,—which relates to the laws of disease. An elaborate treatise on the diseases of the horse has not been aimed at; without, however, attempting an exhaustive description of the many maladies which horse-flesh is heir to, it will be absolutely essential to enter so far into the subject that the enquirer may not have to complain of meagre information on matters which he rightly looks upon as most important. An intelligent acquaintance with the principles of pathology is rather calculated to check than to encourage rashness on the part of the amateur doctor, and such knowledge is certainly not likely to incline its possessor to undervalue the services of the experienced professional man.

Horses are particularly liable to certain acute affections of the digestive and respiratory organs, and in many cases the success of remedial measures will depend on the promptitude with which they are applied. Something must be done in sudden illness of man or beast, and no doubt can exist of the desirability of using remedies which will be beneficial instead of harmful. It would conduce to the interest of the veterinary surgeon, and also to the well-being of domestic animals, if stock-owners were encouraged to keep a supply of suitable remedies at hand for use in an emergency, instead of being forced to take refuge in the employment of the numerous nostrums which are offered, and of the composition of which no one but the proprietor knows anything.

Among the diseases of the horse, those which are traceable to the invasion of parasites have received a considerable share of attention. Their importance cannot well be overrated, whether these creatures occur in the form of microbes of the disease-producing order, originating specific actions which result in the development of infective material, or in the more tangible shape of so-called worms occupying the cavities of the body and causing irritation by their mere presence. The whole subject of parasitism is profoundly interesting, and although it has for many years been an absorbing study with many advanced scientists, some of whom have devoted their lives to the solution of the problems which it presents, there are numerous mysteries yet to be elucidated in reference to the

origin and development of even some of the most common animal parasites. With the completion of the section treating of diseases of the horse, the chief object of the work may be said to have been attained, but there remained some collateral subjects on which the reader might reasonably expect to be informed. Among them that of the Law of Warranty in relation to soundness and unsoundness, vices, and patent defects, comes prominently forward. Very few experienced owners have escaped some complications in connection with the purchase and sale of horses, and it was deemed, therefore, advisable to make this chapter as complete and authoritative as possible.

Dentition has been treated in special relation to the changes which occur in the teeth at different periods in the life of the horse, and thus afford a fairly correct indication of the animal's age. The subject is an interesting one for the horseman, and at times it is a matter of some importance to be able to judge of a horse's age, especially when the marks to which so much value is attached in early life have been obliterated. The illustrations in this chapter are authentic copies of drawings from nature, excepting a few that show the peculiar changes which occur after the age of ten years up to thirty or later. These drawings were copied from a pamphlet by Mr. Sidney Galvayne, and it will be sufficient to remark that his method of judging the age beyond the period when the ordinary marks are present has been tested for many years and found to be remarkably reliable.

Horse-shoes and horse-shoeing form a subject the value of which will not be questioned. It has been exhaustively treated by the writer both in its ancient and modern aspects, chiefly of course in its regard to the application of shoes to the healthy foot. The methods of shoeing for the cure or amelioration of diseases and defects have not, however, been passed over. An index and a copious glossary have been appended to the work. The last was rendered necessary by the unavoidable introduction of terms in such constant use among scientists that it was inexpedient to omit them, although it has been throughout recognized as a matter of moment that the text should be as free from technicalities as the character of the different subjects would permit.

Lastly, it is necessary to refer to the illustrations, which are numerous, and it is believed well calculated to fulfil their object. Some of the most important have been drawn especially for this work, and to ensure absolute accuracy advantage has been freely taken of the art of photography, which has recently made such vast strides towards perfection.

THE EXTERIOR OF THE HORSE

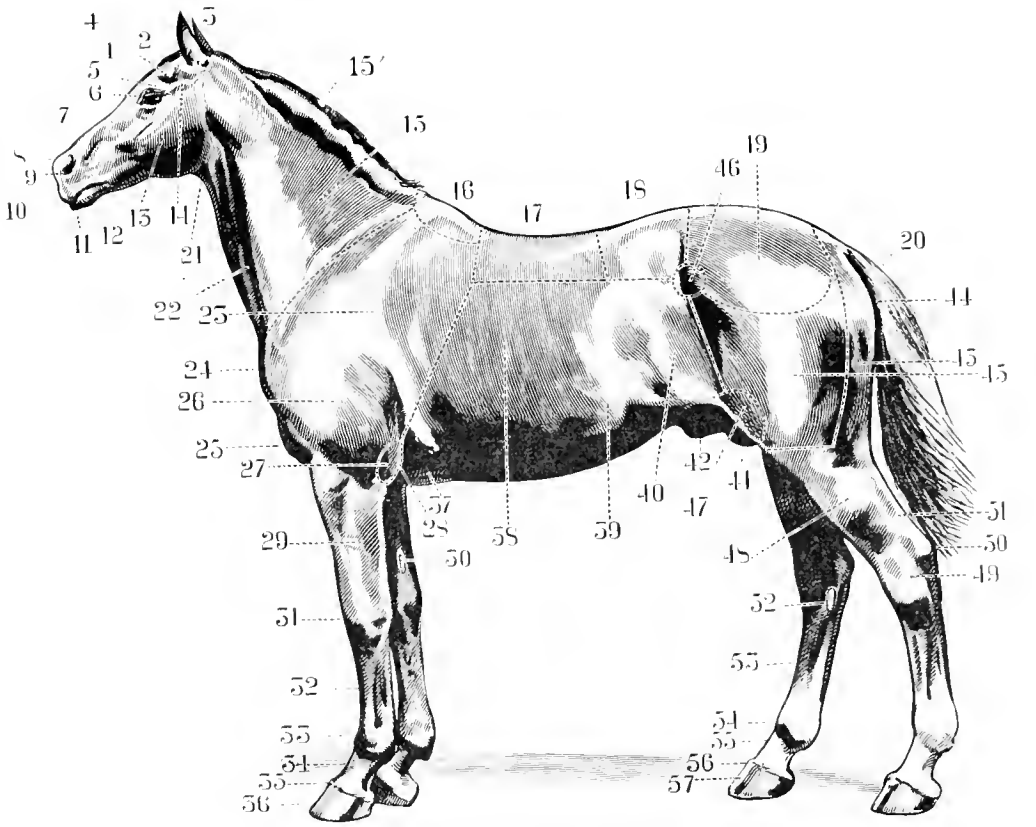


Fig. 1.—Exterior of the Horse: Side View

REFERENCES

(*Note.*—The same numbers are used to indicate the same parts throughout this chapter.)

1 Forehead.
2 Forelock.
3 Ear.
4 Supra-orbit.
5 Eyebrow.
6 Eye.
7 Nose.
8 Nasal Peak.
9 Nostril.
10 Upper Lip.
11 Lower Lip.
12 Chin.
13 Cheek.
14 Temple
15 Neck.
15′ Crest.
16 Withers.
17 Back.
18 Loins.
19 Croup.
20 Tail.
21 Throat.
22 Cervical Groove.
23 Shoulder.
24 Shoulder Point.
25 Breast.
26 Upper Arm.
27 Elbow.
28 Point of Elbow.
29 Forearm.
30 Chestnut.
31 Knee.
32 Canon.
33 Fetlock-joint.
34 Pastern.
35 Coronet.
36 Foot.
37 Brisket
38 Chest
39 Abdomen.
40 Flank.
41 Testicles.
42 Sheath.
43 Buttock.
44 Point of Buttock.
45 Thigh.
46 Haunch.
47 Stifle.
48 Leg or Gaskin.
49 Hock.
50 Point of Hock.
51 Tendo Achilles or Hun-string.
52 Chestnut.
53 Canon.
54 Fetlock-joint.
55 Pastern.
56 Coronet.
57 Foot.

Section I

THE EXTERIOR OF THE HORSE

DIVISIONS AND POINTS OF THE HORSE

The body of the horse may be primarily divided into three parts, namely, 1, the Head; 2, the Trunk; and 3, the Extremities. The first two are so disposed as to form cavities in which are lodged the various organs essential to life, as the brain, heart, lungs, organs of digestion, &c. The head comprehends those portions forming the skull and the face—parts anterior to the neck. The trunk, which makes up the chief bulk of the body, is divisible into—1, the spine, which extends from the head backwards to the tail; 2, the thorax or chest; and 3, the abdomen or belly. The extremities are movable supports of the body. The two in front (fore extremities) extend from the top of the shoulders to the feet, the two behind (hind extremities) from the hip-joints to the feet.

Viewed externally, each of these several regions presents a number of parts, which for convenience of description are distinguished by special names, some of which are based on anatomical considerations, while others are of common origin, and more or less familiar to all horsemen. Of the two sides of the body, it is usual to speak of the left as the "near" side, being the one on which the rider mounts and dismounts, and the right as the "off" side.

It is common when referring to the ox to speak of the upper part extending from the head to the tail as the "top-line", and the same expression is not infrequently employed in the case of the horse.

In looking at the exterior of the horse the primary divisions to which we have referred become at once obvious. The subdivisions—their extent and limitations, together with the surface markings and characters of each—will now be considered in some detail. The information to be here supplied may be regarded as essential and complemental to that higher branch of horse knowledge presently to be considered under the head of conformation. Each of the primary divisions is capable of being broken

up into subordinate parts. These have been classified and arranged in the following description, and the subdivisions are mapped out and indicated in the figures which accompany it.

1. THE HEAD

The head is suspended from the neck, to which it is united by a number of muscles, as well as by a long elastic ligament attached to the cervical vertebræ and extending backward to the withers. Its bony base is united with the first bone of the spine by a free-moving joint.

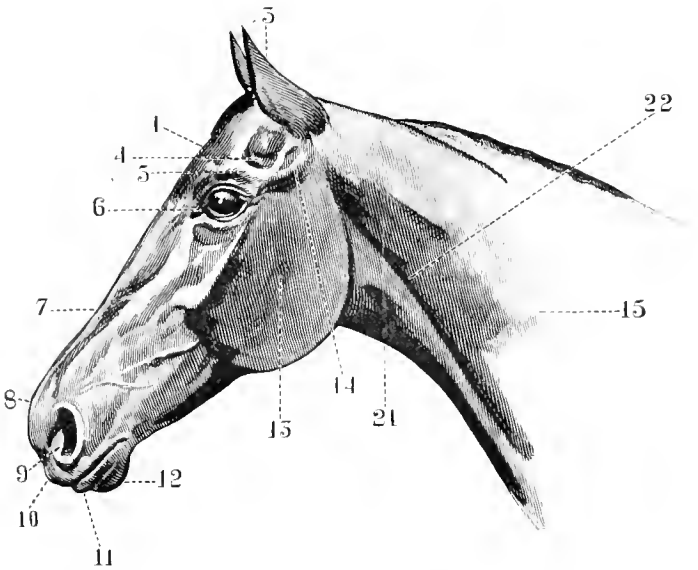


Fig. 2.—The Head: Side View

[1] Forehead. [3] Ears. [4] Supra-orbit. [5] Eyebrow. [6] Eye. [7] Nose. [8] Nasal Peak. [9] Nostril. [10] Upper Lip. [11] Lower Lip. [12] Chin. [13] Cheek. [14] Temple. [15] Neck. [21] Throat. [22] Cervical Groove.

The head presents for consideration two extremities (the superior and the inferior) and four surfaces, distinguished as the anterior or front, the posterior or back, and the right and left lateral surfaces.

SUPERIOR EXTREMITY OF THE HEAD

This region comprises—1, the poll; and 2, the throat.

The Poll (fig. 6).—The poll or nape is the highest point of the head. It occupies the space between the ears. In front it is limited by a bony ridge forming the summit of the forehead, and termed the *occipital crest*. Behind, it joins the anterior extremity of the cervical crest or upper line of the neck. A tuft of hair, the *forelock*, falls from this point over the fore-

head, and serves to protect the eyes from the sun's rays, as well as from insects and other foreign matter.

The Throat.—The throat is that part occupying the angle between the lower jaw and the neck. It extends upwards towards the ear, and comprises the *larynx* or upper part of the windpipe, and the *pharynx* or receptacle into which the food passes before being swallowed. Outwardly to these, and beneath the skin on either side, is the *parotid gland*, an organ whose function it is to secrete saliva. Many important nerves and vessels are also situated about the throat.

INFERIOR EXTREMITY OF THE HEAD

This region comprises—1, the lips; and 2, the mouth, with the organs and parts contained in it.

The Lips.—The lips are placed at the lowermost part of the head, where they guard the entrance to the mouth. The upper lip unites with the lower just above the chin, where together they form the angles or commissures of the mouth. They are loosely attached to the bones of the upper and lower jaws respectively, and by the aid of a number of muscles suitably disposed, are capable not only of opening and closing the entrance to the mouth, but also of seizing the food in the act of feeding. They are indeed organs of prehension, and may be regarded as hands to the mouth. The upper one is the more voluminous, and has a greater range of action than the lower one.

A number of long coarse hairs are scattered over the outer surface. These are connected by their roots with nerves of sensation, hence they have been termed "feelers". It is a common practice among grooms and dealers to clip them off in order to give the head a clean and more refined appearance.

"The lip, like the nostril, the eye, and the ear, is a most remarkable organ of expression. When it is curled up, relaxed, lowered, elevated, or reclined, we have so many variations which affect the whole physiognomy. When we study the expression of the horse under the influence of pain, fear, pleasure, or distress; when we observe his attitude as he attempts to snatch or bite somebody, or one of his companions; when we observe the lips in certain diseases; when we translate the language of the stallion as he scents the mare, or the animal as he passes through the death agonies, then can we see how perfect the expression is and how it varies in each circumstance." —*Goubaux and Barrier.*

The lower extremity of the head, from a line drawn across the face above the nostrils and angle of the mouth, is commonly spoken of as the muzzle.

The Mouth.—The mouth is an elongated cavity situated between the upper and lower jaws. Below it is limited by the lips, laterally by the cheeks, while above it communicates with the cavity of the throat (pharynx). When the mouth is opened the parts exposed are—1, the teeth; 2, the tongue; 3, the bars; 4, the frenum.

The Teeth.—The front teeth, of which there are six in each jaw, are distinguished as incisor teeth. Beyond these, in the male animal, are four *canine* teeth, one on each side above and below. In the mare these are absent. Still farther back will be seen the molar or large teeth, or, as they are commonly termed, grinders, of which there are twenty-four, arranged in rows of six, right and left of each jaw. The eruption of the teeth and the changes which they undergo serve to indicate the age. (See Dentition.)

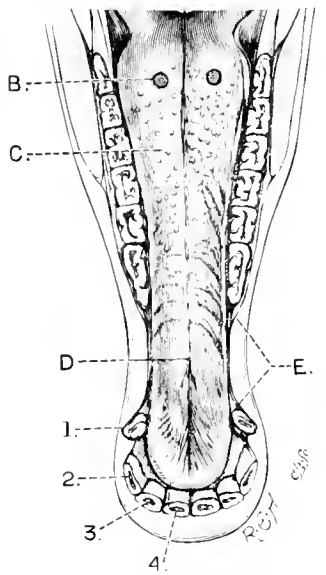


Fig. 3.—Portion of Lower Jaw, showing Tongue, &c.

B, Circumvallate Papillæ.
C, Fungiform Papillæ.
D, Tongue.
E, "Bar" or Interdental Space.
1, Canine Tooth. 3, Lateral Incisor.
2, Corner Incisor. 4, Central Incisor.

The Tongue.—The tongue is the soft fleshy organ filling up the channel of the mouth. The anterior part is free and capable of being protruded, while the posterior portion is fixed to the lower jaw. Behind, it is connected with a bone (os hyoides) having several joints, so arranged that the organ may be freely extended and retracted. It is acted upon by five pairs of muscles, by which it is capable of being moved in every direction.

Endowed with a high degree of sensibility and mobility, it plays an important part in the function of mastication and deglutition.

The Bars.—The bars are represented by that small section of the lower jaw situated in the male between the canine teeth and the grinders. In the mare, where the former are absent, the space is larger, being limited in front by the corner incisors. The bars are covered by a thin, sensitive membrane, on which the bit rests, and are frequently the seat of injury in "pullers", often resulting in death and sloughing of a portion of the jaw-bone. They vary in form in different animals, in some the edge of the bone is sharp and in others rounded. In the former condition the pressure of the bit on the part is more severe in its effects than in the latter, and the difference in the "mouths" of horses is in a large measure due to this cause. As the result of bad breaking and unskilful riding the bars frequently become callous, and the natural sensitiveness

on which the tractability of the horse depends is blunted, or altogether destroyed, in which case the animal is rendered difficult to control.

The Palate.—The palate consists of a thick membrane of a whitish or pale pink colour, covering the roof of the mouth. The front, and by far the larger portion, is known as the *hard palate* (fig. 5), in consequence of the dense nature of the tissues composing it. Here it presents a number of

Fig. 4.—Examination of the Mouth

a, Tongue; *b*, frœnum; *c c*, openings of the salivary ducts; *d*, teeth.

transverse ridges, separated from each other by shallow grooves, and divided along the central line by a longitudinal furrow. The ridges are arched forward, and in the act of feeding assist in keeping the food in the mouth. Behind and continuous with the hard palate, but beyond the reach of ordinary inspection, is the *soft palate*.

That portion of the hard palate immediately behind the incisor teeth frequently becomes swollen and painful in young horses especially during the period of the second dentition, when the animal is said to be suffering from "lampas". (See Diseases of the Mouth.)

The Frœnum (fig. 4).—The frœnum, or anterior pillar of the tongue, is a loose triangular fold of mucous membrane extending from the under surface of the tongue to the lower jaw. It unites the two parts, and

while allowing ample liberty to the tongue it restricts in some measure the range of its action.

ANTERIOR SURFACE OF THE HEAD

This division of the head comprises—1, the forehead; 2, the nose; and 3, its two orifices or nostrils.

The Forehead.—The forehead forms the upper part of the head in front, extending from the poll and ears, down to a line drawn

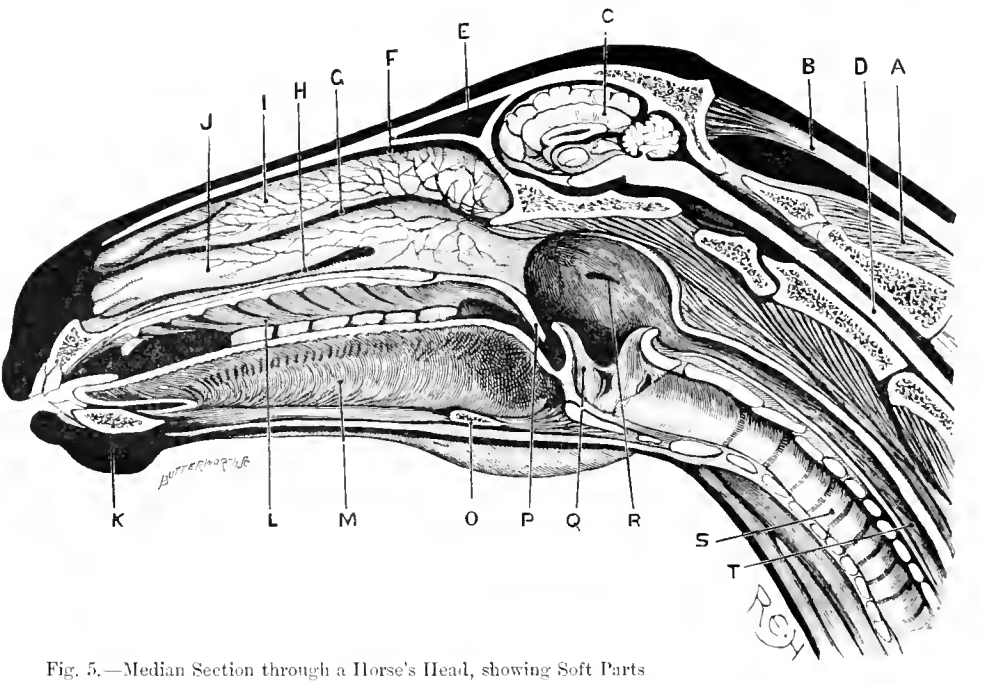


Fig. 5.—Median Section through a Horse's Head, showing Soft Parts

A, Lamellar Portion of Ligamentum Nuchæ.
B, Funicular Portion of Ligamentum Nuchæ.
C, Brain in Section. D, Spinal Cord. E, Frontal Sinus.
F, Anterior Meatus } of Nose.
G, Middle Meatus }
H, Posterior Meatus }
I, Superior or Maxillary Turbinated Bone.
J, Inferior Turbinated Bone. K, Body of Lower Jaw.
L, Hard Palate, showing Transverse Ridges in Section.
M, Tongue. O, Section through Hyoid Bone.
P, Soft Palate. Q, Epiglottis.
R, Opening of the Eustachian Tube into the Pharynx.
S, Cartilaginous Rings forming the Trachea or Windpipe.
T, Œsophagus or Gullet.

across the face between the inner corners of the eyes. On either side it is limited by the ear, the temple, the supra-orbit or "hollow of the eye", the orbital ridge, and the eye itself. The upper portion forms the vault of the cranium, and encloses the brain; the lower forms the front wall of two hollow cavities termed the "frontal sinuses". High up it is somewhat rounded, being covered by two fleshy muscles. The lower part is protected only by skin. The forehead is partly covered by the "forelock", to which reference has already been made. The forehead

not only varies in form and size in different animals, but also in the same animal at different periods of life. In the young it presents a striking prominence, but it becomes less marked as the animal grows older, and as the frontal sinuses open out and their bony walls expand.

The Nose.—The nose forms the greater portion of the lower division of the front of the face. It is formed by the union of a number of bones, and consists of two elongated cavities separated from each other by a thick plate of cartilage (septum nasi) and communicating behind with the larynx or upper part of the windpipe, and also with the pharynx, or throat. It is broad and expanded, where it joins the forehead, and gradually narrows as it proceeds downward. It ends in two crescentic openings —the nostrils, between which is a slight prominence, the "nasal peak". Laterally it is limited by the eyes and cheeks. The form of the nose, like that of the forehead, is subject to variation with age. The bones on either side of it, into which are implanted the fangs of the molar teeth, subside as the latter descend, giving to the face a sharp angular appearance, and to the nose increased prominence. This characteristic is especially marked in old horses, and serves to distinguish them from more youthful specimens.

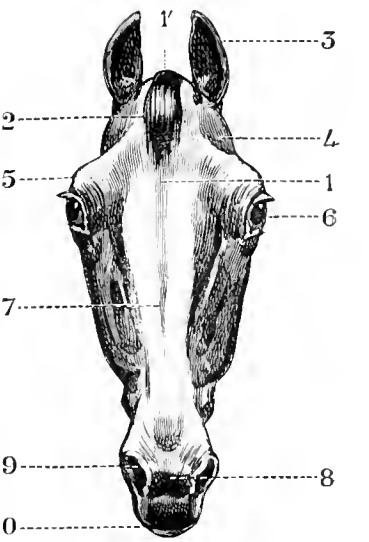


Fig. 6.—The Head: Front View

[1] Forehead. [1′] Poll. [2] Forelock.
[3] Ear. [4] Supra-orbit. [5] Eyebrow.
[6] Eye. [7] Nose. [8] Nasal Peak.
[9] Nostril. [10] Upper Lip.

The Nostrils.—The nostrils are two crescent-shaped openings situated at the lower extremity of the head, right and left of a central prominence, designated the "tip" of the nostril or the "nasal peak". They communicate with the right and left nasal passages respectively, along which the air enters and leaves the lungs in the act of breathing. In consequence of the long and pendulous condition of the soft palate (fig. 5), which shuts off the mouth from the windpipe, respiration in the horse can only take place through the nostrils. These orifices and the passages into which they lead are very capacious. Around the former are scattered a few long coarse hairs, the roots of which are connected with nerves of sensation. Like the hairs of the lips, they play the part of "feelers". It frequently happens, however, in our better-bred horses, that these tactile organs are removed as a part of the equine toilet. If the nostrils be opened (fig. 7) by drawing apart their edges, or, as they are technically termed, alæ, with the thumb and finger, there will be found, in addition

to the respiratory passages, a short blind pouch or cul-de-sac in each, formed by an inflection or in-folding of the common integument or skin. This is placed outwardly and somewhat above the main channel, and is distinguished as the "false nostril". Its use is not well understood, but it would appear to be the remains of an organ once essential in the economy of the primitive horse, but now probably of little physiological importance. At the time this observation is being made, an opening, about the diameter of a hemp-seed (*c*, fig. 7), may be noticed at the point of junction of the infolded skin and the mucous membrane. This is the orifice by which the tears or superfluous moisture escapes from the eyes, from which it is carried by a long narrow tube termed the *nasal duct*. When seen for the first time it has been regarded by some as an ulcer, and we have on two or three occasions been consulted as to its treatment.

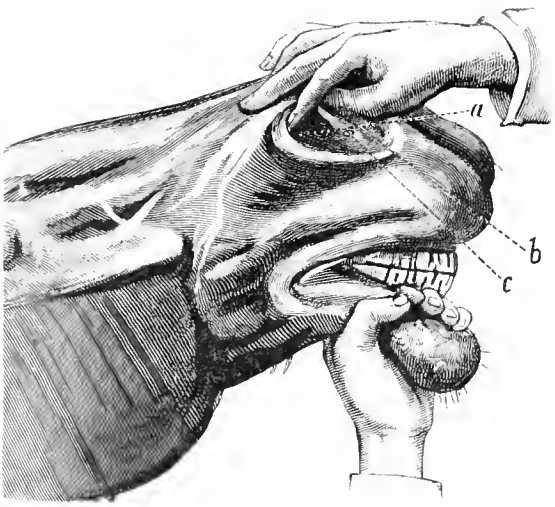


Fig. 7.—Examination of the Nostril

a, True Nostril. *b*, False Nostril. *c*, Nasal Duct.

LATERAL SURFACES OF THE HEAD

The lateral surfaces, or sides of the head, are distinguished as *right* and *left*. They are symmetrical, and the parts presented for consideration are the same in each. Commencing from the top, we have—1, the external ear; 2, the temple; 3, the supra-orbit; 4, the orbital-ridge; 5, the eye; 6, the cheek.

The External Ear.—The ear is situated on the lateral aspect of the poll, on the outer side of the forehead, and above the temple. It is formed by a plate of cartilage or gristle invested by a covering of skin, and rests on a cushion of soft fat. It is acted upon by no fewer than twenty muscles, so arranged as to enable it to move in any direction in quest of sound. Internally it is covered with long soft hairs, which serve to prevent the entrance of insects and other foreign matter.

The Temple (fig. 2).—The temple occupies a space on the side of the head immediately beneath the ear and on the site of the articulation of the lower jaw. In front it has the *supra-orbit*, or hollow of the eye;

behind, the *parotid gland*; and below, the *cheek*. This region is important, not only because it embraces within its area the joint by which the lower jaw is hinged on to the head, but also on account of the *temporal artery* which crosses it near to the surface.

Supra-orbit (fig. 2).—The supra-orbit is a somewhat rounded space situated above the eye and between the forehead in front and the temple behind. It contains a mass of soft loose fat, which in the young animal is very abundant, and quite, or nearly, fills up the cavity. As age advances, the fatty matter becomes less and less considerable, until in old animals a deep hollow appears, known as the "hollow of the eye".

To a certain extent this change in the fulness of the cavity serves to distinguish an old from a young animal, but it cannot be said to be at all times reliable. In very poor colts the fat becomes in a large measure absorbed, in which case an expression of advanced age is imparted to the face. This, however, disappears again as soon as the horse recovers his condition.

Orbital-arch or Eyebrow (fig. 2).—The orbital-arch is the prominent crescent-shaped ridge which spans the upper surface of the globe of the eye. It forms the anterior limit of the hollow of the eye, and is the base of attachment of the upper eyelid.

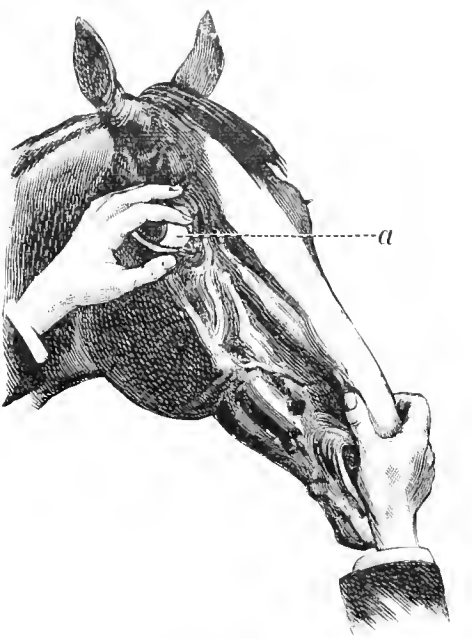


Fig. 8.—Examination of (*a*) the Haw or *membrana nictitans*

The Eye.—The eye occupies a deep bony cavity on the side of the forehead and beneath the orbital-arch. It is protected by two movable curtains, the upper and lower *eyelids* and their appended *lashes*, which not only serve to protect from and to displace any foreign matter that may fall upon it, but also assist in regulating the amount of light passing into it. The parts visible in ordinary observation of this organ are—1, a dense opaque membrane, the *sclerotic* or "white of the eye"; 2, a central transparent membrane, the *cornea*. These form the outer capsule in front, within which may be noticed 3, a yellowish-brown ovoid membrane, the *iris*, encircling a clear dark space, 4, the *pupil*. An examination of the inner corner of the eye reveals a flat fleshy-looking body termed the *membrana nictitans*, or, commonly, the third eyelid or "haw" (fig. 8). This

organ is composed of a thin piece of cartilage covered with mucous membrane. It is capable of being projected over the surface of the eye, and by its thin edge may be made to sweep away any foreign matter that may accidentally fall upon it. Deep pressure applied to the upper lid with the finger, as shown in fig. 8, will cause the haw to protrude.

The Cheeks.—The cheeks form the greater portion of the side of the face. They extend from the temples and throat above to the angles of the mouth below. In front they reach to a vertical line drawn downward from the outer corner of the eye to the nostrils, and behind extend along the posterior edge of the lower jaw. The upper part of the cheek is broad and flat, and corresponds to the expanded portion of the lower jaw-bone. The inferior portion is narrower, loose in its arrangement, and more distensible. In the groove dividing the two parts are lodged the main blood-vessels of the face, as well as the duct of the parotid gland by which saliva is carried to the mouth.

POSTERIOR SURFACE OF THE HEAD

The posterior surface of the head embraces the *intermaxillary space*, the chin, and the chin groove.

Intermaxillary Space. — The intermaxillary space is enclosed within the two branches of the lower jaw, which bound it laterally. Above and below it is limited by the throat and chin respectively. It corresponds to the under surface of the tongue, and gives lodgment to the submaxillary lymphatic glands. The latter, which lie on the inner side of the broad portion of the jaw-bone immediately beneath the skin, are specially interesting to the horseman on account of the enlargement they undergo in glanders, strangles, nasal gleet, and other diseases affecting the nostrils.

The Chin (fig. 2).—The chin is the prominence situated above and behind the lower lip, and the *chin groove* appears as a transverse depression above it.

2. UPPER ASPECT OF THE BODY—TOP-LINE

The Neck.—The neck comprises the cervical portion of the spine, and the muscles attached thereto, as well as a broad elastic ligament running through the centre of its entire length. In front it supports the head, where it concurs to form the poll, and lower down is united to the throat. Behind, the neck joins on to the shoulders, the withers, and the breast. The superior arched border constitutes the cervical crest (fig. 1), the curve of which varies in different races of horses, and in different members of the same race. In stallions it is specially marked in all breeds.

The inferior border of the neck is rounded, and encloses the windpipe or *trachea* (fig. 5). A little higher, on the side, may be noticed a longitudinal groove (fig. 2) running from the throat downward. This is the "channel of the neck" or *cervical groove*, along which runs the *jugular vein*, and, deeper still, the *carotid artery*.

The Withers.—The withers comprise that prominent portion of the spine placed between the neck and the back, and supported on either

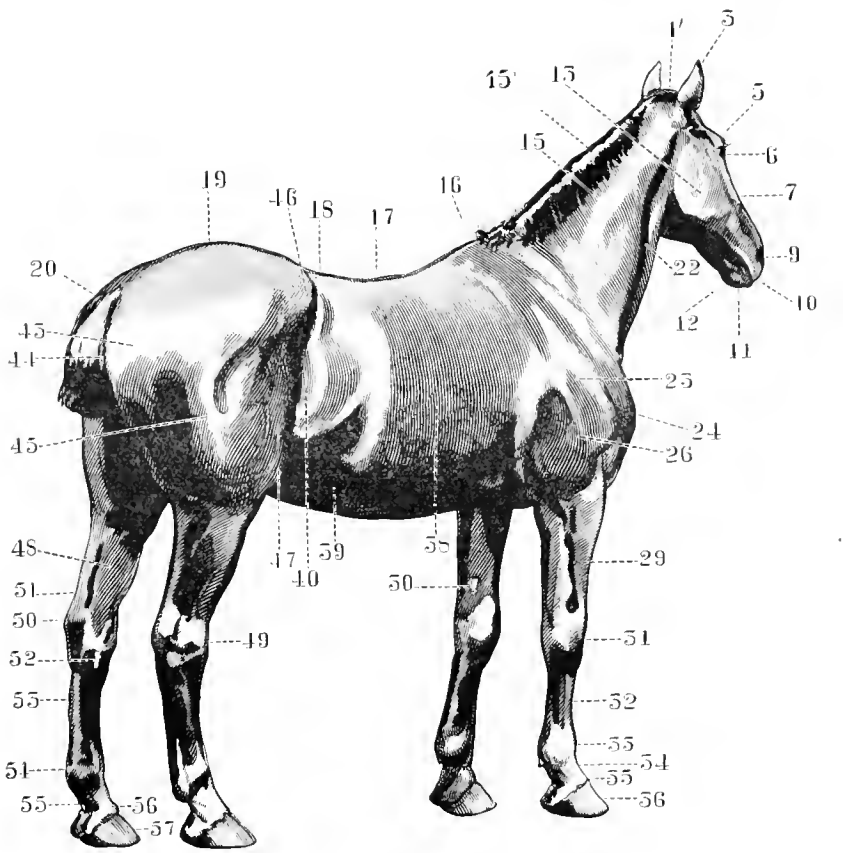


Fig. 9. Exterior of the Horse: Three-quarter Back View

[1′] Poll. [3] Ear. [5] Eyebrow. [6] Eye. [7] Nose. [9] Nostril. [10] Upper Lip. [11] Lower Lip. [12] Chin. [13] Cheek. [15] Neck. [15′] Crest. [16] Withers. [17] Back. [18] Loins. [19] Croup. [20] Tail. [22] Cervical Groove. [23] Shoulder. [24] Shoulder Point. [26] Upper Arm. [29] Forearm. [30] Chestnut. [31] Knee. [32] Canon. [33] Fetlock-joint. [34] Pastern. [35] Coronet. [36] Foot. [38] Chest. [39] Abdomen. [40] Flank. [43] Buttock. [44] Point of Buttock. [45] Thigh. [46] Haunch. [47] Stifle. [48] Leg or Gaskin. [49] Hock. [50] Point of Hock. [51] Tendo Achilles or Ham-string. [52] Chestnut. [53] Canon. [54] Fetlock-joint. [55] Pastern. [56] Coronet. [57] Foot.

side by the upper extremity of the shoulders. It is formed by the long projecting spines of the dorsal vertebræ, numbering from the second to the sixth, or seventh, and the muscles in connection with them. From this point the height of the horse is taken, and, as will be seen later

on, it is a part to which great importance is attached in the matter of conformation.

The Back.—The back, as understood by horsemen, is an arbitrary division of the part properly so called, and extends from the slope of the withers in front to the last rib behind, where it is connected with

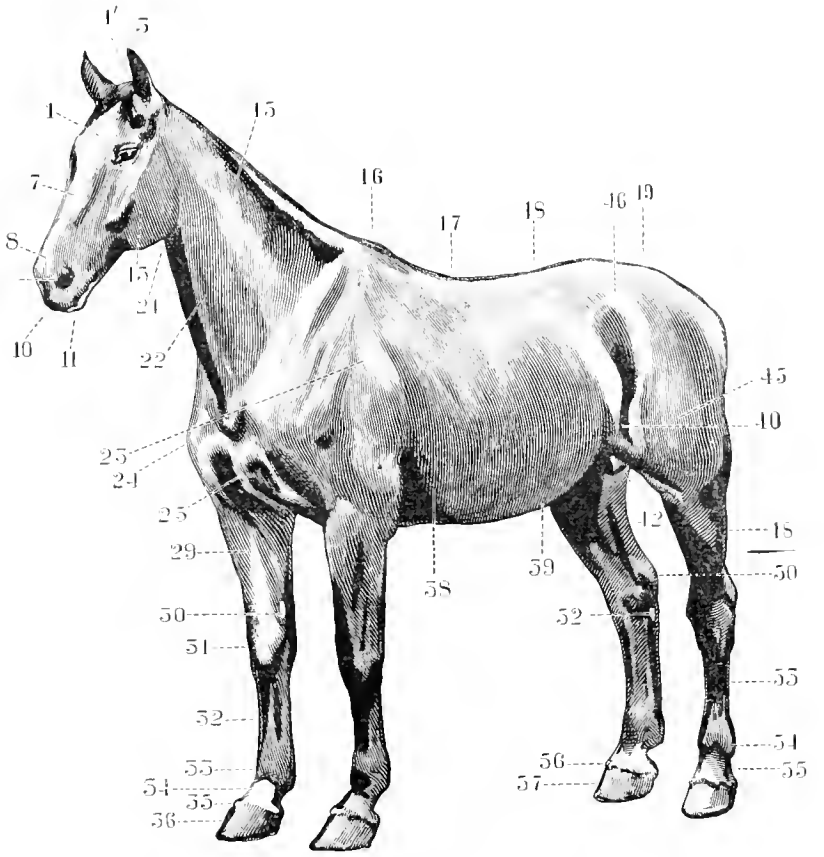


Fig. 10.—Exterior of the Horse. Three-quarter Front View

[1] Forehead. [1'] Poll. [3] Ear. [7] Nose. [8] Nasal Peak. [9] Nostril. [10] Upper Lip. [11] Lower Lip. [13] Cheek. [15] Neck. [16] Withers. [17] Back. [18] Loins. [19] Croup. [21] Throat. [22] Cervical Groove. [23] Shoulder. [24] Shoulder Point. [25] Breast. [29] Forearm. [30] Chestnut. [31] Knee. [32] Canon. [33] Fetlock-joint. [34] Pastern. [35] Coronet. [36] Foot. [38] Chest. [39] Abdomen. [40] Flank. [42] Sheath. [45] Thigh. [46] Haunch. [48] Leg or Gaskin. [50] Point of Hock. [52] Chestnut. [53] Canon. [54] Fetlock-joint. [55] Pastern. [56] Coronet. [57] Foot.

the loins. It extends over and embraces about eleven of the eighteen dorsal vertebrae, as well as the arches of the corresponding ribs. The back is largely made up of muscles of various forms and lengths, some of which extend from the haunch behind to the neck in front.

The Loins.—The loins, like the withers and the back, have their anatomical base in the spine, and extend from the last dorsal vertebra

before to the croup and haunch, with which they unite behind. The bones which enter into its formation are usually six in number, and they differ in their skeletal relations from those of the back and withers in having no ribs connected with them. On either side of the loins below this region is the flank.

The Croup.—The croup is the uppermost part of the quarters situated between the loins and the tail. Below on either side it joins the thighs and upper part of the buttocks. The haunch-bones concur with the sacrum in forming the basement structure of this region, on which are situated a number of large important muscles of locomotion. Of these, some are engaged in the movements of the hind limbs, while others act upon the spine. The form, length, and width of the croup varies in different animals. In the mare, during the later stages of pregnancy, the muscles of this part become depressed, or sink downward, especially towards the root of the tail. This is generally described as a "sinking of the haunch-bones" or "falling of the hips". It results, however, from a relaxation and yielding of the broad ligaments of the pelvis, on which some of the muscles rest.

The Point of the Haunch is a division of the quarter commonly spoken of as the "point of the hip". It is situated in front of the croup, behind and below the loins, and in proximity with the flank.

It is formed by the projecting outer angle of the *ilium* or haunch-bone. Owing to its prominence, this part is specially liable to injury from forcible contact with doorways, and in slipping-up it not infrequently suffers by contact with the ground. Fracture and displacement of the bone are of frequent occurrence, and give rise to that state known as "down at the hip".

3. POSTERIOR EXTREMITY

The Tail.—The tail consists of from twelve to fifteen vertebræ, enclosed in long tapering muscles, and these are invested with a layer of skin covered with long hairs. It emerges from, and is continuous with, the spinal column. On either side its base is in relation with the croup, and below with the anus, which it covers.

The Anus.—The anus is the terminal extremity of the intestinal canal, through which the excrement leaves the body. As we have just remarked, it is situated beneath the tail, and below it is a smooth hairless length of skin termed the *Perineum*. The anus is surrounded by a circular muscle termed the *Sphincter Ani*, which, by its power of contracting, prevents the involuntary escape of the fæces. In old animals,

and in those weakened by disease and poverty, the power of this muscle is enfeebled, and the orifice becomes relaxed and loses its full power of control. In paralysis of the anus the fæces are allowed to escape from the bowel involuntarily. This condition is usually associated with paralysis of the tail.

The Perineum.—The perineum is the hairless region which in the male extends from the anus to the scrotum, or purse. In the female it is short, and limited below by the *vulva*. It is bounded on either side by the thighs and buttocks.

4. ANTERIOR EXTREMITY OF THE BODY

The Breast.—The breast is situated at the lower extremity of the neck, and in front of the chest, supported on either side by the arms. In some horses it is fleshy and rounded, in others sharp and prominent. Its basement structure is formed by the sternum or breast-bone.

5. THE LATERAL AND INFERIOR REGION

The Brisket.—The brisket is a prolongation of the breast backward between the fore-limbs and along the inferior face of the trunk, where it forms the floor of the chest. Behind the elbows it corresponds to the "girth-place".

The Chest.—The chest is a spacious cavity occupying the anterior third of the trunk, and containing within it the lungs, the heart, and the great vessels proceeding to and from them, as well as the œsophagus, a portion of the trachea, and some important nerves.

The withers and back form together its upper boundary. Outwardly on either side it is limited by the ribs, to which in front are connected the shoulder and the arm. The floor is formed by the sternum or breast-bone, and parts in relation with it, while in front and behind it is bounded by the neck and the abdomen respectively, and separated from the latter by the diaphragm or midriff.

The Abdomen.—The abdomen embraces all that region comprising the inferior and lateral parts of the trunk between the chest in front and the sheath and groin behind, or, in the female, the groin and the mammary gland. It encloses the organs of digestion, urination, and generation, and other accessory parts. Its outer and inferior walls are made up of superimposed layers of broad expanded muscles and their tendons, which are braced up by a sheet of elastic tissue that spreads over the under surface of the belly immediately beneath the skin. Within is a more or less thick layer of fat.

Behind, between the thighs, the abdomen presents two oval openings (external abdominal rings) through which the testicles descend into the scrotum, and remain suspended by means of the spermatic cords. In the fœtus a third opening (umbilicus) is observed in advance of the sheath. This is commonly termed the navel opening, and gives passage to blood-vessels by which the fœtus is brought into relation with the dam through the medium of the fœtal membranes. After birth the navel-string sloughs away and the umbilical opening closes.

The Flank.—The flank is a portion of the wall of the abdomen extending from the lumbar spine downward, between the last rib in front, and the haunch, thigh, and stifle-joint behind. Below, it is continuous with the floor of the belly. Above, the flank presents a triangular depression immediately beneath the loins. This is commonly termed the "hollow of the flank".

In sickness the flank frequently serves as a guide to the existence of disease. In certain conditions of ill-health it becomes "tucked up" or distended, while in others it affords an indication of the rate of breathing by its alternate rising and falling.

The Groin.—The groin is the space situated right and left of the testicles in the male and of the mammary gland in the female. Outwardly it is bounded by the inner and upper part of the thigh. The skin covering this part is comparatively thin and supple, and covered with fine hairs. It is also abundantly furnished with small glands that throw out an unctuous secretion for the lubrication of the parts. Enlargements sometimes appear in this region from swelling of the lymphatic glands, or as a consequence of rupture, and in geldings as the result of disease of the spermatic cord—schirrus cord.

6. EXTERNAL GENITAL ORGANS

MALE

The Testicles (fig. 1).—The testicles are two ovoid glands situated in the space between the thighs. They are enclosed in a pouch of skin, the *scrotum*, commonly spoken of as the "purse", and separated from each other by a membranous partition. They appear in the purse at birth, but soon disappear, to descend again about the tenth month. The left one is generally somewhat lower than the right. In some instances the testicles fail from various causes to reach the scrotum, or only one of them may "come down", in which case they are found either in the cavity of the belly or in the *inguinal canal*. When this is the case the animal is called a crypt orchid, or more commonly a

"rig" or ridgeling. In geldings the under surface of the scrotum is marked by a depressed scar on either side of the middle line, resulting from the operation of castration.

The Sheath (fig. 1).—The sheath is a loose portion of infolded skin arranged in the form of a recess, into which the penis is retracted. The infolded portion of integument is thin, supple, and devoid of hairs, but largely supplied with *sebaceous glands*, which secrete an unctuous matter for the lubrication of the penis.

FEMALE

The Vulva.—The vulva is the genito-urinary orifice of the female. It is an elongated, vertical opening, placed below the anus. On either side of it are two folds of skin and mucous membrane, termed the *labia* or lips. When these are separated, a small globular organ is seen lodged in a fold of mucous membrane at the lower part of the orifice; this is the *clitoris*.

During the period of heat, or æstrum, the *labia*, swollen and sensitive, are repeatedly opened and closed, and the clitoris becomes momentarily exposed and projected backward.

7. FORE EXTREMITY

The anterior limb or fore extremity extends from the withers above to the foot below; it is united to the trunk by muscles extending along the back, up the neck, and on to the walls of the chest and breast. It presents for consideration a number of regions, as well as parts and divisions of more or less importance.

The regions of the front member comprise the *shoulder*, the *arm*, the *forearm*, the *elbow*, the *knee*, the *canon*, the *fetlock*, the *pastern*, the *coronet*, and the *foot*, to which must be added the *ergot*.

The Shoulder.—The shoulder is situated on the lateral aspect of the chest, and forms the chief point of attachment of the fore-limb to the trunk. In front it follows the line of the posterior extremity of the neck, with which it unites. Behind, it is limited by a more or less prominent muscular ridge extending down to the elbow. Above, it reaches as high as the withers, and custom has fixed its lower limits at the elbow. It must, however, be pointed out that what is commonly spoken of as the shoulder embraces also the upper arm, and as these two parts are intimately related and show no lines of demarcation, they may for convenience of description continue to be classed together.

Shoulder Point (fig. 1).—The shoulder point, as it is erroneously termed, is the angular prominence corresponding to the shoulder-joint.

As a matter of fact it is not formed by the shoulder, but by the arm, and would be more appropriately designated the point of the arm.

The Elbow.—The elbow marks the point of union of the arm above with the forearm below. The point of the elbow is the summit of the *ulna* or smaller of the two arm bones. From the prominence of this part it stands exposed to injury, especially when the feet are allowed to grow long or the heels of the fore-shoes are made to project beyond them, the result being an inflammatory swelling termed capped elbow.

The Forearm.—The forearm extends from the elbow-joint to the knee. It is invested by muscles, which act upon the bones below, some carrying them forward (extensors), others bending them backwards (flexors). The forearm comprises two bones, the *radius* and the *ulna*. The point of the elbow, as already explained, is formed by the superior extremity of the latter.

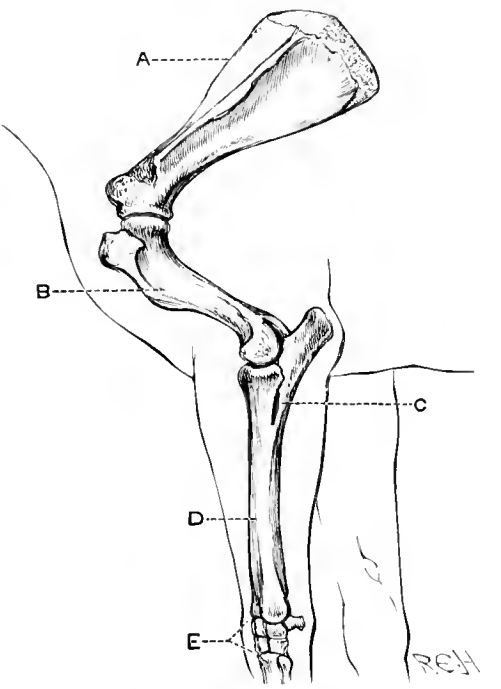


Fig. 11.—Bones of Left Foreleg

A, Scapula or Shoulder Blade. B, Humerus or Arm Bone. C, Ulna. D, Radius. E, Carpal Bones, forming the Knee.

The Chestnuts or Castors.—The chestnuts or castors are small horny excrescences of an ovoid or elliptical form, situated on the inner surface of the arm a little way above the knee. They vary in size in different breeds, and to a less extent in different animals of the same breed. In coarsely-bred Cart-horses they reach their greatest dimensions, and sometimes grow outward like veritable horns, in which case they are usually removed by the smith. The chestnuts are probably the remains of a vanished hoof, which in the ancient horse invested a digit corresponding to the thumb of man.

The Knee.—The knee of the horse corresponds to the wrist of man. It is formed by two rows of small bones, which rest upon the metacarpal bones below, and give support to the forearm above. The upper row comprises four bones, and the lower one three. It is a joint of many parts, but although complex in its structure its action is limited to the movements of flexion and extension. Passing over it before and behind are some large tendons, which are attached to the bones below and bring them into action.

The Canon.—The region between the knee and the fetlock-joint is termed the canon. It comprises three bones, together with several important tendons and ligaments. The bones consist of the *large metacarpal*, or canon bone, and the two *small metacarpal*, or splint bones. The canon bone occupies the central position, and imparts to the front of the limb its natural roundness. The splint bones are placed one on each side, and somewhat towards the back of the limb. They are united with the large metacarpal bone by short ligaments, which in adult animals become transformed into bone, and then form a permanent bond of union between them. The splint bones are very important, from the fact of their being the seat of bony excrescences termed "splints", which often produce severe and protracted lameness. Situated in front of the large canon bone are the great extensor tendons of the phalanges, and behind it, in the order named, are: the suspensory ligament; the subcarpal ligament; the tendon of the flexor pedis perforans; and the tendon of the flexor pedis perforatus (fig. 12).

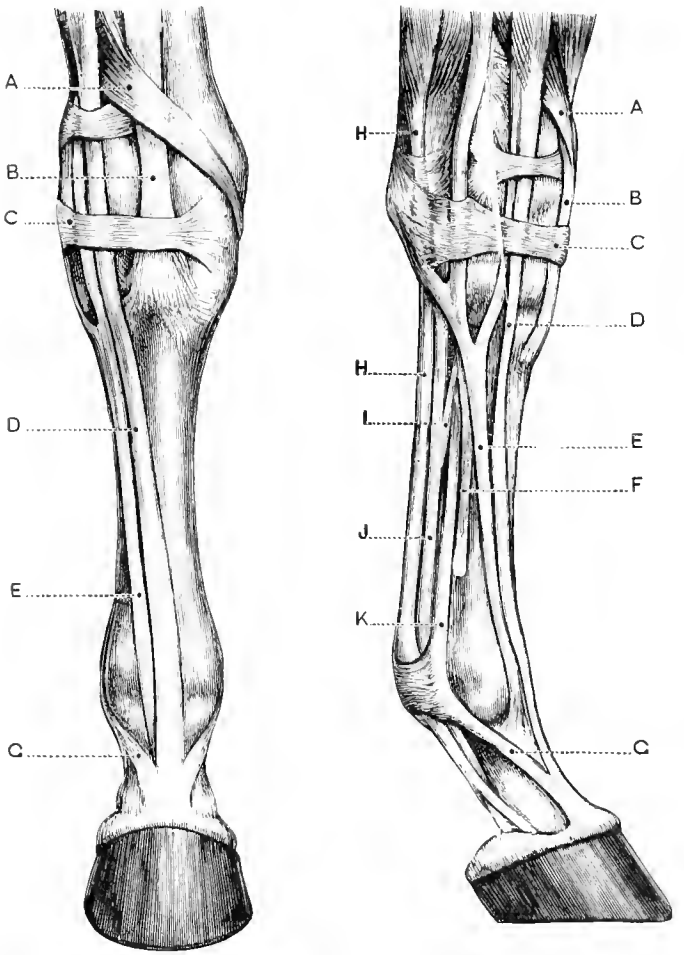


Fig. 12.—Principal Tendons and Ligaments of the Fore Limb

1. Front View.

A, Extensor Metacarpi Obliquus.
B, Extensor Metacarpi Magnus.
C, Annular Ligament.
D, Extensor Pedis.
E, Extensor Suffraginis.
G, Outer Branch of Suspensory Ligament.

2. Outer Side View.

A, Extensor Metacarpi Obliquus.
B, Extensor Metacarpi Magnus.
C, Annular Ligament.
D, Extensor Pedis.
F, Extensor Suffraginis.
F, Outer Small Metacarpal or Splint Bone.
G, Outer Branch of the Suspensory Ligament.
H, Flexor Pedis Perforatus.
I, Subcarpal Ligament.
J, Flexor Pedis Perforans.
K, Suspensory Ligament.

There are no active muscles in this region, but diminutive remains of them are to be found, which, in the far-off ancestors of the horse with their several toes, were muscles of considerable size and importance.

The Fetlock.—The fetlock is situated between the canon bone above and the pastern below. Its bony base results from the union of the large metacarpal bone with the first phalanx, or large pastern bone, and the two sesamoid bones. The latter are tacked on behind, and are supported in position by the suspensory ligament. A tuft of long hair hangs from the angle of the fetlock. This is the *footlock*, and in its midst may be noticed the *ergot*, a horny growth varying in size in different animals, but especially large in coarse-bred Cart-horses. Like the *chestnut*, the *ergot* represents the vestigial remains of what was once a digit in the lost ancestors of the horse. In its present condition it is believed by some to exercise a protective influence when the fetlock is brought to the ground during the rapid locomotory movements occurring in the forced gallop, and especially in the final struggle of a race.

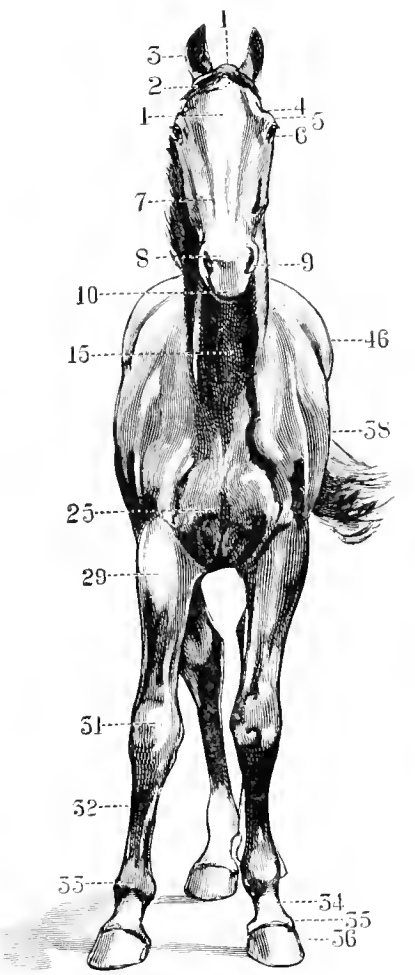


Fig. 13.—Front View of Horse

[1] Forehead. [1'] Poll. [2] Forelock. [3] Ear. [4] Supra-orbit. [5] Eyebrow. [6] Eye. [7] Nose. [8] Nasal Peak. [9] Nostril. [10] Upper Lip. [15] Neck. [25] Breast. [29] Forearm. [31] Knee. [32] Canon. [33] Fetlock-joint. [34] Pastern. [35] Coronet. [36] Foot. [38] Chest. [46] Haunch.

The Pastern.—This region extends from the fetlock to the coronet, between which points it takes a more or less oblique direction downward and forward. Its bony base is formed by the first and second phalanges, or, as they are commonly termed, the large and small pastern bones.

The Coronet.—The coronet is that part of the limb situated immediately above the hoof, and extending from front to back. It is, in fact, the lowermost division of the pastern. The term is useful only as indicating proximity with the crown, or upper circumference of the foot.

The Foot.—The foot, as understood by the comparative anatomist, embraces all those parts of the limb beneath the lower extremity of the forearm in front and the inferior extremity of the leg or second thigh behind.

In the horse, however, the term is restricted to the terminal portion of the limb, or that section of it enclosed in the hoof. Two bones and part of a third constitute its bony base. The former comprise the third phalanx —the pedal or coffin bone, and the navicular bone; the latter, the *second phalanx*, or coronet bone. Connected with these are various tendons, ligaments, fibrous tissue, and cartilages, the whole of which are invested by a highly vascular and sensitive covering of modified skin, and outwardly protected by a horny envelope, or huge nail, to which the term hoof has been applied.

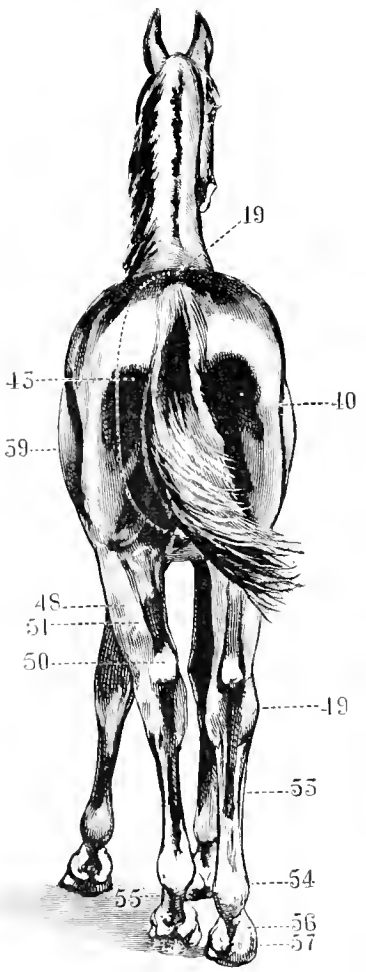


Fig. 14. Back View of Horse

[19] Croup. [39] Abdomen. [40] Flank. [43] Buttock. [48] Leg or Gaskin. [49] Hock. [50] Point of Hock. [51] Tendo Achilles or Ham-string. [53] Canon. [54] Fetlock-joint. [55] Pastern. [56] Coronet. [57] Foot.

8. THE POSTERIOR OR HIND LIMB

The Quarter. In considering the regions of the hind limb, it will be convenient, if not anatomically exact, to refer to that division of the horse commonly spoken of as the "quarter". This region comprises all those parts extending from the loin and flank in front to the buttock behind. It embraces within its scope the croup, the haunch, the thigh, the buttock, and the stifle.

The Thigh.—This is the most massive and muscular of the several regions of the extremities. The thigh commences above, at the lower border of the croup, and extends downward as far as the stifle. In front it is limited by the flank, while behind it is in relation with the buttock.

The ossific base of the thigh is the femur, or thigh-bone.

The Buttock.—The buttock is the posterior fleshy part of the quarter extending from the root of the tail downward to a little distance below the stifle-joint. There is no anatomical boundary by which its anterior limits can be fixed. In this connection the division is an arbitrary one. It embraces portions of the croup, the thigh, and the leg or gaskin. The point of the buttock (fig. 1) is formed by a bony projection (ischial tuberosity) below the root of the tail.

The Stifle (fig. 1).—The stifle comprehends that angular prominence situated in front of the limb immediately beneath the flank. At this point the femur, or thigh-bone, articulates with the tibia, or leg-bone, and the *patella*, or knee-cap, to form the stifle-joint. This is the largest and most powerfully constructed joint in the body. It is remarkable, not only for the complexity of its arrangement, but also for its considerable range of action.

The Leg.—The leg or gaskin is that part of the hind extremity extending from the thigh to the hock-joint. Behind, it is bordered by two powerful tendons (tendo Achilles) (fig. 1), both of which are firmly united to the point of the hock, and are commonly spoken of as the ham-strings. The ossific base of this region is formed by two bones—the *tibia* and the *fibula*. The latter is a small slender bone placed on the outer side of the former, which is of considerable dimensions and power.

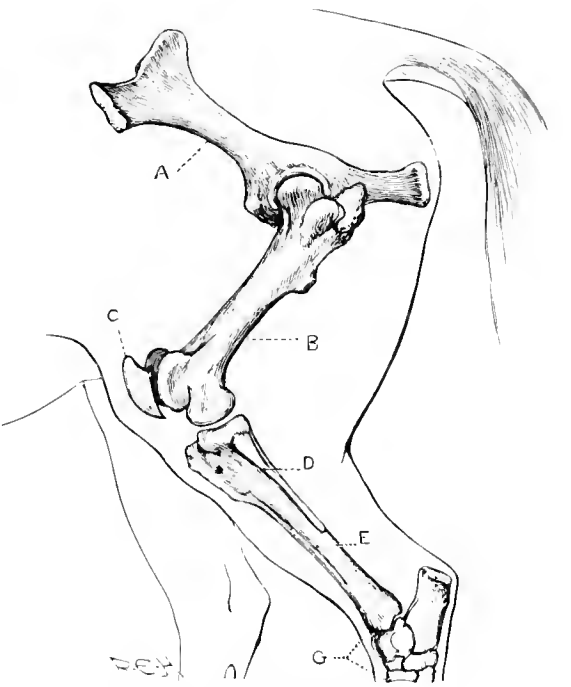


Fig. 15.—Bones of Left Hind Leg

A, Hip Bone or Pelvis. B, Thigh Bone or Femur. C, Knee-cap or Patella. D, Fibula. E, Tibia. G, Tarsal or Hock Bones.

The Hock—Tarsus.—The hock intervenes between the leg and the canon bone. It is more or less flat on the outer side, convex on the inner surface, narrow behind, and broad and somewhat flat in front. This region comprises six small bones, which are united by short strong ligaments, and supported by the metacarpal bones. Above, they articulate with the tibia, or leg-bone, and with it form a hinge-joint of considerable extent by which the chief movements of the hock are effected. Above and behind, the hock forms an acute angle with the tendo Achilles, termed the *point of the hock* (fig. 1).

The regions below the hock are the canon, the fetlock, pastern, coronet, foot, and corresponding parts already described in dealing with the fore extremity.

CONFORMATION AND ITS DEFECTS

SECTION II

CONFORMATION AND ITS DEFECTS

There are few Englishmen who possess, or have possessed, a horse, who do not aspire to know something about conformation and its mechanical relations to pace, action, and power, although few would claim to have the most elementary acquaintance with those divisions of science on which an exact knowledge of the subject depends. Anatomy, physiology, mechanics, and physics form but a small part of the intellectual equipment of the average judge, and yet it is doubtful if the proud possessor of these higher branches of learning would excel in precision of judgment his less gifted confrère.

Dealers and Breeders, and those who adjudicate at our horse exhibitions, have little more than the empirical faculty to guide them, yet they are among the most expert in the world—recognizing at a glance not only the grosser faults and weaknesses of form and action, but refinements of distinction and aptitude to service which only the practised eye can discern. Granting, however, the power to acquire this high standard of excellence by purely empirical means, it will not be suggested that the goal of perfection in horse judging has yet been attained, or that the facility of attainment will not be enhanced by a consideration of those departments of science already referred to. If by external conformation we are to appraise the value of a horse, it must be by estimating with more or less precision his physical capabilities and endurance as an animal machine, and to this end routine observation and practical judgment might with advantage be supplemented by the teachings of science.

To all persons concerned with the breeding and employment of the horse as a means of locomotion, a knowledge of conformation and its defects is indispensable to success as a commercial enterprise, and notwithstanding the purely empirical form which that qualification assumes to-day, in those who possess it, the time is not far distant when the exterior of the horse will come to be interpreted by the light of a more

exact knowledge of his anatomical and mechanical construction. It is by a study of conformation that we assign to a horse the particular place and purpose to which he is best adapted as a living machine and estimate his capacity for work, and the highest success in this connection will be best attained by the judicious blending of practice with science.

CENTRE OF GRAVITY

One important step towards an appreciation of the effects of conformation on the progression and utility of the horse is a general understanding of the location of the centre of gravity, the disturbances which it is liable to undergo as a consequence of the various movements of the body in locomotion, and the special influence of conformation in accelerating and determining the extent of such disturbances. In dealing with this branch of the subject, our readers need hardly be reminded that all bodies whatsoever, whether living or dead, are influenced by the force of gravity in such a way that they are drawn towards the earth. Every body, whether large or small, is composed of a number of molecules more or less regularly distributed throughout its mass, and upon each of which the pull of gravity is exerted, hence results the exercise of a number of small parallel forces acting in the same direction.

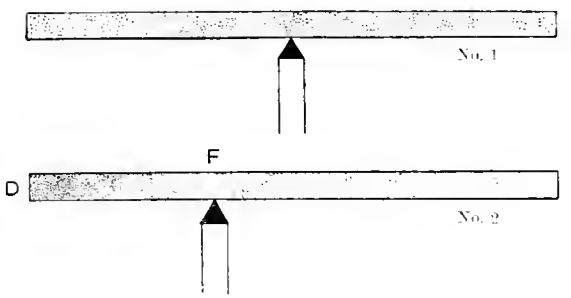
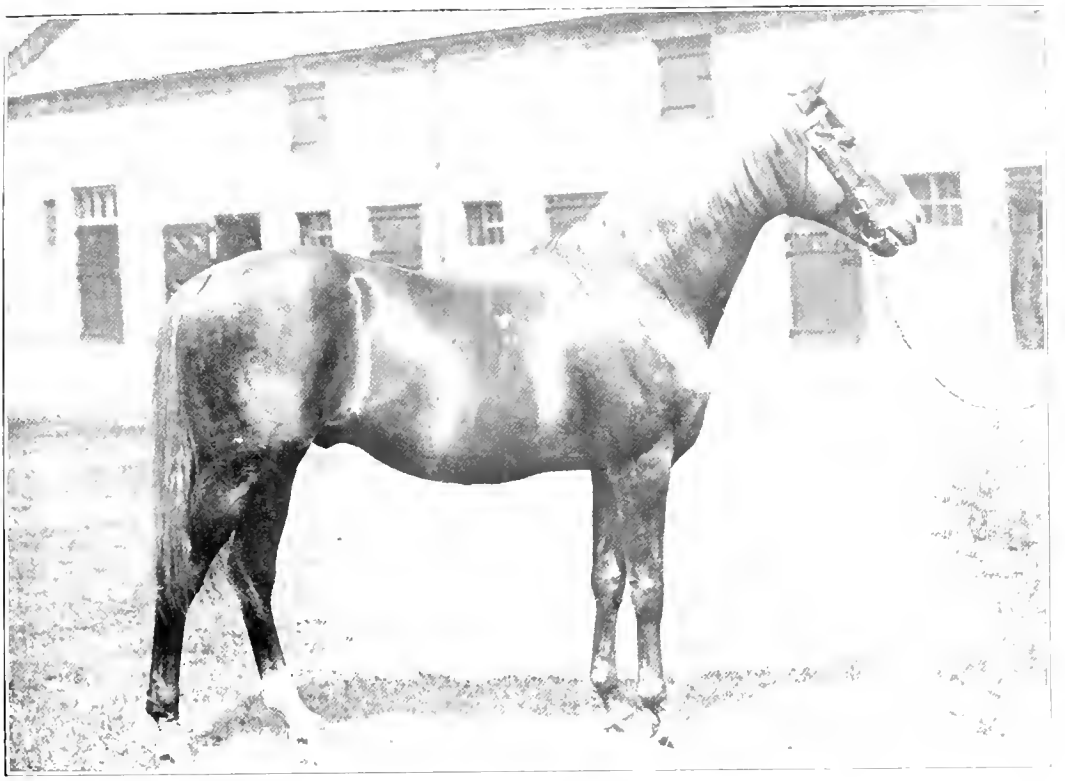


Fig. 16

What is called the centre of gravity will be found in the centre of these parallel forces, which may or may not be in the centre of the body. If the molecules making up the mass be of the same kind and uniformly distributed throughout it, the force of gravity will be exercised on all parts alike, in which case the centre of gravity will be in the centre of the body. If, on the other hand, the molecules be more numerous in one part than another, or in other words, if one part be more dense than another, the force of gravity will attract that part more, in which case the centre of gravity, instead of being situated in the middle of the body, is drawn nearer to the part which weighs the most.

To illustrate this point let us take the case of a rod made up of a number of particles equal in weight and equally distributed throughout it, as shown in fig. 16, No. 1.

Here the several component particles being attracted towards the



SYMMETRY

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earth equally in parallel forces, it is evident that the centre of these forces, which is the centre of gravity, will be at the middle point. Quite different will be the case where the rod is made of particles of the same kind, unequally distributed, and causing one part to be denser or thicker than the other (fig. 16, No. 2). In this case the centre of gravity is found to fall at F, in the direction of the heavier part D, where the parallel forces are for equal lengths the more numerous.

These conclusions may be roughly illustrated by taking a piece of stick two or three feet in length, of uniform thickness, and placing it

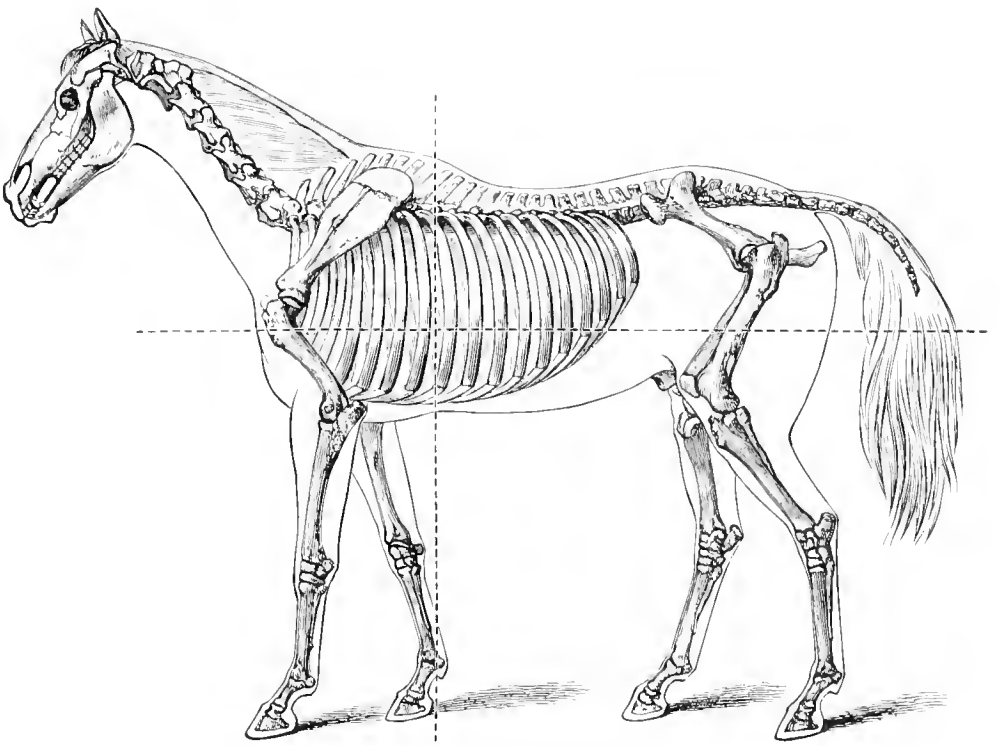

Fig. 17.—The Centre of Gravity

The centre of gravity is at or near the spot where the dotted lines cross

across the edge of a knife, where it may be made to balance or brought to a state of equilibrium when resting on a point about the middle of its length. If now a small quantity of lead be run into one end, and the experiment be repeated, the point at which the stick can now be made to balance will have shifted, and will be found somewhere towards its loaded extremity.

According to the researches of Professor Colin, the centre of gravity in the horse is situated somewhere about the point of intersection of two lines, one passing vertically through the trunk behind the xiphoid

cartilage of the sternum or breast-bone, and the other horizontally between the middle and lower third of the body. This conclusion has been confirmed by the experiments of Messrs. Goubaux and Barrier, and may be accepted as approximately correct.

EQUILIBRIUM

"A body is said to be in equilibrium when the several forces acting upon it balance one another." The part upon which it rests is termed the base of support. It may be necessary to point out that there are three conditions of equilibrium, viz. stable, unstable, and neutral. Of these the two former are more especially concerned with equine conformation and movement. In *stable equilibrium* a body, when slightly displaced or pushed aside, will return to its original position. If, on the contrary, it tends to move farther away from its original position or to topple over, its equilibrium is *unstable*.

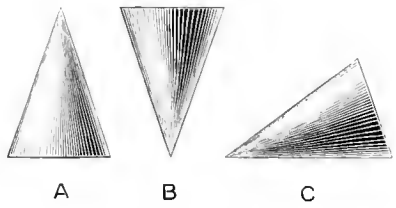

Fig. 18.—Equilibrium
A, Stable. B, Unstable. C, Neutral

The conditions which conduce to render equilibrium stable are:

1. A broad base of support.
2. That the centre of gravity should be situated low down.
3. That the line of gravitation should fall at or near the centre of the base.

From these considerations it would appear, as Goubaux and Barrier have pointed out, that "a horse having a heavy body mounted upon long slender limbs, drawn close to the median plane, will be endowed with an equilibrium relatively unstable". While, conversely, a horse standing on short legs, set well apart so as to supply a large base of support, will possess an equilibrium relatively stable.

The horse in progression is constantly displacing the centre of gravity in one direction or another, and the disturbance of equilibrium which is thereby effected is as constantly being restored by the formation of a new base of support, which will vary both in form and extent with the various movements incidental to the several paces respectively.

In a standing position the base of support of the horse may be described as an area enclosed within four lines placed nearly at right angles to each other, and extending from foot to foot, as shown in fig. 19.

In this attitude equilibrium presents its highest degree of stability. It is during the fast paces, when the trunk is impelled forward by the

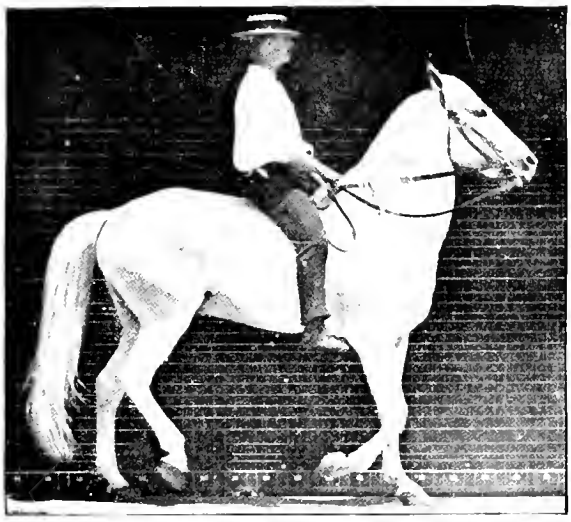

Fig. 1

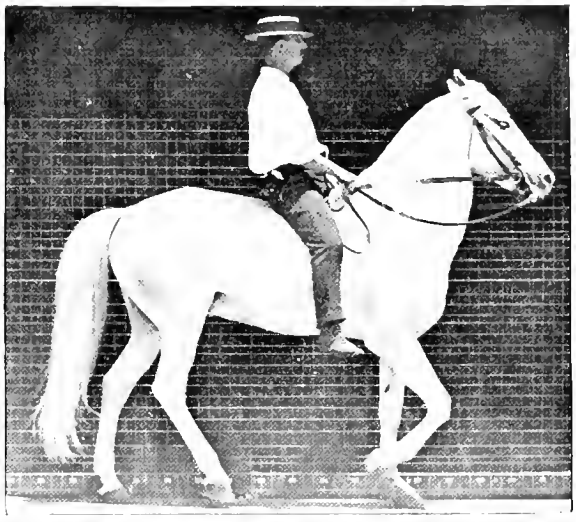

Fig. 2

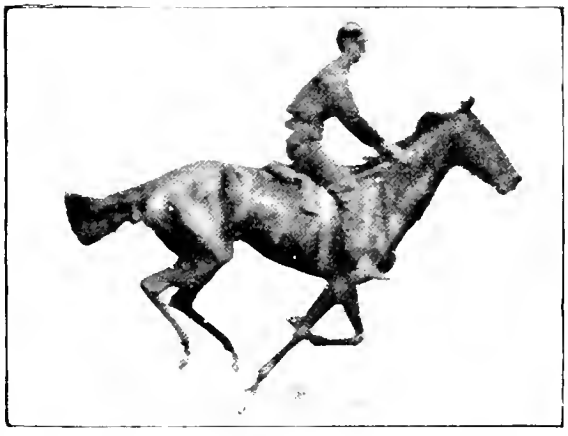

Fig. 3

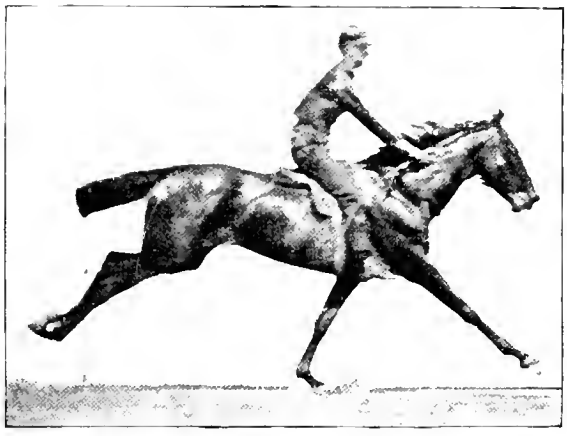

Fig. 4

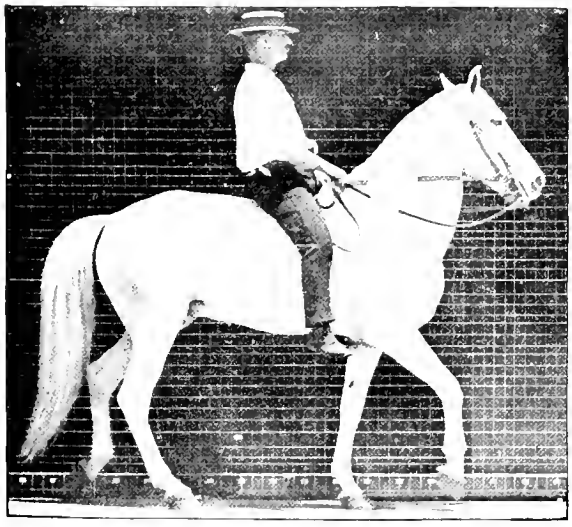

Fig. 5

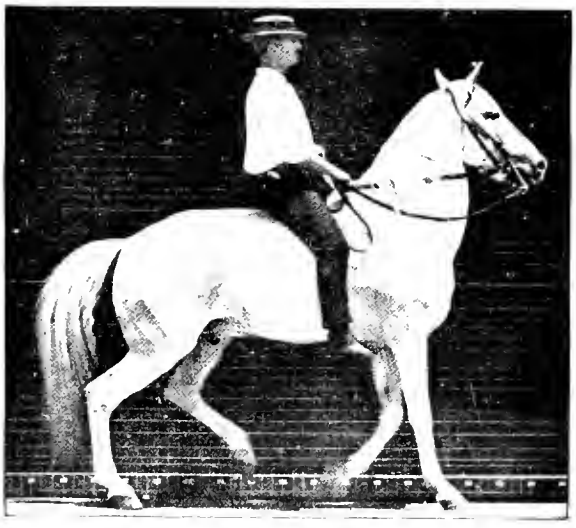

Fig. 6

EQUILIBRIUM IN THE WALK AND IN THE GALLOP

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impulses from behind, that the centre of gravity is most displaced, and the feet leave the ground to form new bases of support and re-establish the disturbed equilibrium. This will be made obvious by examining the various phases of movement in one or other of the several paces. In the walk, which, as we have elsewhere pointed out, is one of four time, the base of support is made to undergo a succession of changes peculiar to it. In Plate II, figs. 1 and 6, it runs parallel with the long axis of the body, being formed by the two left and right limbs respectively. In fig. 2 it is altered both in shape and extent by the right hind-limb being brought to the ground, thereby enlarging its area, while at the same time it is made to assume a triangular form. In fig. 5 the line of direction is diagonal from the left fore to the right hind. These alterations in the base of support are called forth by the forward inclination of the trunk displacing the centre of gravity. This forward displacement is very much more considerable as the pace increases, as shown in particular phases of the fast gallop (figs. 3 and 4 of the same plate), where a vertical line drawn from the centre of gravity would fall in front of the fore-foot, or leading support, and consequently outside the base of support, thus requiring a fresh base to be formed by the advancing fore-limb to re-establish equilibrium.

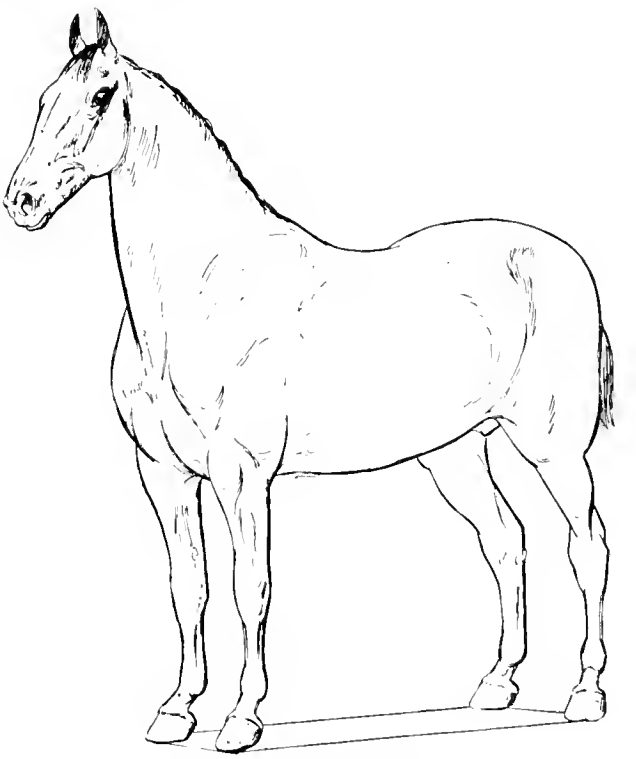


Fig. 19.—Base of Support

MUSCLES IN RELATION TO POWER AND SPEED

The movements of locomotion by which the body is transferred from place to place are effected by muscles, which, acting in obedience to the will, are termed voluntary muscles.

These fleshy masses which clothe the bones are each and all endowed with the property of contractility. When this power is called into action by nervous stimulation it has the effect of bringing the two extremities of the muscle towards each other, by which the length is diminished, while at the same time its thickness increases.

These changes are well seen in the biceps or muscle of the upper arm, if the elbow be bent and the closed hand be brought up to the shoulder.

When a stimulus is applied to a nerve entering a muscle, the latter is made to contract throughout its entire length at nearly the same moment; as a consequence, it is found that the period occupied by the contraction of a short muscle is nearly equal to that required for a long one. It will be obvious from this, that as a muscle will contract to the extent of one-third of its length, the speed and propulsive power of a horse with long limbs and long muscles will be much greater than that which can be produced by another having short ones, assuming, of course, that all other things are equal.

Of two muscles of the same length whose activity of contraction is at its maximum, the greatest power will be given out by that which has the greatest volume; in other words, the strength of a muscle is in proportion to its thickness; and it is equally true to say that the longer the muscle the greater will be the range of its contraction, and the more considerable the displacement it will effect in the movement of the bones to which it may be attached. Hence it is that while muscles of strength are short and thick, those of speed are long and slender.

From the foregoing facts the conclusion may be drawn, that inasmuch as short legs imply short muscles, animals so constructed must be comparatively slow in their movements however great may be their strength; and, conversely, horses whose legs are relatively long, and whose range of action is necessarily more considerable, will be capable of developing a much higher rate of speed. The draught-horse and the race-horse afford typical examples of the truth of the proposition that "the volume of the muscles gives the measure of force, their length that of speed". In choosing the one, therefore, the highest muscular development consistent with reasonable activity in the slower paces should be sought for, while in the other the first and most important requirement is ample length of the leg muscles in particular, combined with just so much thickness as will yield the necessary power by which to support the weight and endure the strain that may be imposed upon them. Any surplus muscle over and above these requirements will augment the weight, and tend rather to retard than to increase the velocity of the gait.

THE BONES AS LEVERS

The muscles concerned in locomotion are each, with few exceptions, attached to two bones, either directly, or through the medium of tendons. The bones connected by their extremities form a series of free-moving joints, and being thus enabled to move one upon the other, constitute so many bony levers by which the movements of the body are effected.

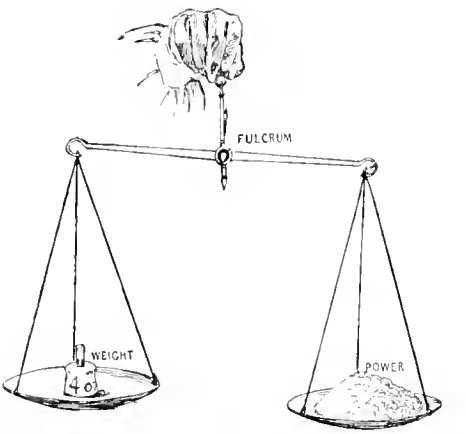


Fig. 20.—Lever of the First Order

A lever is a rigid and inextensible bar used for the purpose of moving bodies by means of a power or weight either greater or less than that of the bodies themselves.

When a bone is operating as a lever, one end is more or less fixed and made to move upon the corresponding surface of the bone with which it is articulated, and thus performs the office of fulcrum, while the other portion is left free to move in obedience to the power and the weight. A lever presents for consideration three elements, viz. the Fulcrum, the Power, and the Weight, the respective positions of which determine the class to which it belongs.

The action of a lever in the development of force and speed will depend upon the relation of the power to the weight.

Levers are divided into three classes. In levers of the first class the fulcrum is placed between the power and the weight, as illustrated in the beam of an ordinary pair of scales (fig. 20).

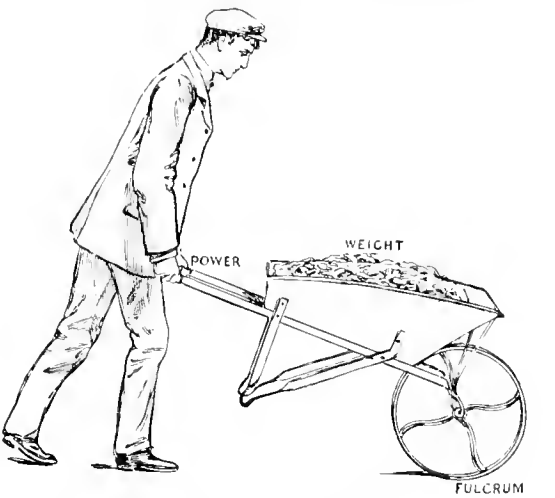


Fig. 21.—Lever of the Second Order

In levers of the second class the fulcrum is situated at one end, and the weight occupies a position between it and the power. This kind is illustrated in the loaded wheel-barrow, when the man supporting the shafts represents the power, the barrow and its contents the weight, and the wheel the fulcrum (fig. 21).

In levers of the third kind the fulcrum is again at one end, but the power now occupies a position between it and the weight. A common example of this kind is seen in a pair of fire-tongs when holding a lump of coal. The coal here represents the weight, the hand holding the tongs the power, and the joint the fulcrum (fig. 22).

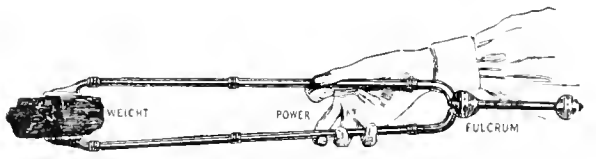


Fig. 22.—Lever of the Third Order

The two arms of a lever are distinguished respectively as the power-arm and the weight-arm. The former is represented by the distance between the point at which the power acts and the fulcrum, and the latter by the distance between the fulcrum and the line through which the weight acts.

In the case of the biceps muscle acting upon the radius (fig. 25), the power-arm is the distance between the centre of the elbow-joint, which is the fulcrum, and the point of insertion of the muscle. The weight-arm is the distance from the fulcrum to the knee.

Of the three varieties of levers referred to above, those of the first class are levers of speed, and for the most part are engaged in movements of extension. Those of the third order are also levers of velocity, but are more especially concerned in movements of flexion.

Levers of the second class are much less frequently met with than those of the first and third, and are essentially levers of force.

In the animal machine an example of a lever of the first order will be found in the extension of the cannon on the hock *when the foot is off the ground*. Here the muscle representing the power (fig. 23) acts upon the point of the hock, the fulcrum is the hock-joint, and the parts below the weight. The same parts of the limb also afford an illustration of a lever of the second class *when the foot is on the ground* (fig. 24). In this instance the point of the hock is the part on which the power acts, the ground is the fulcrum, and the weight is at the hock-joint.

The third order of lever is represented in the fore-arm (fig. 25), where the fulcrum is at the elbow-joint, the power is the biceps muscle, which is inserted just below the elbow in front, and the weight is the parts of the limb below.

It will be seen by an examination of these illustrations, that in levers of the first and third class, or levers of speed, the power-arm is shorter than the weight-arm, while in those of the second order the length of the former exceeds that of the latter.

Bones which act as levers of the first class when the foot is off the ground, become levers of the second kind when the foot is on the ground the fulcrum and the weight having now become displaced.

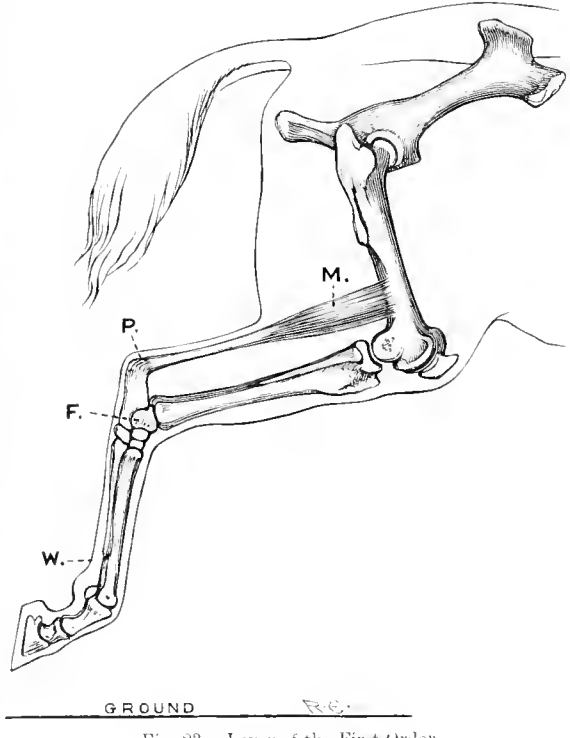


Fig. 23.—Lever of the First Order

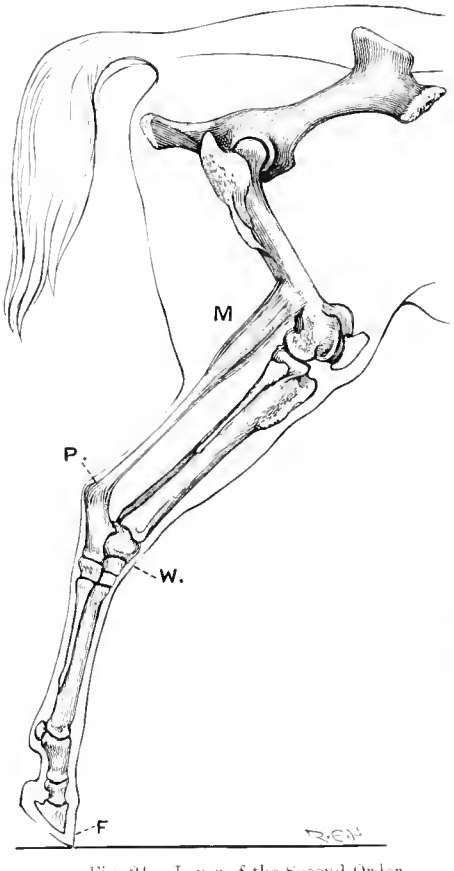


Fig. 24.—Lever of the Second Order

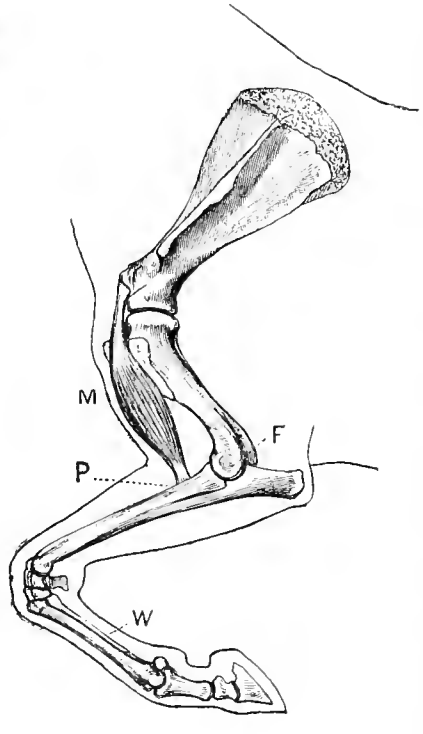


Fig. 25.—Lever of the Third Order

In these diagrams F is the fulcrum, P the point where the power acts, W the weight, and M the muscle which is the source of power

HEAD AND NECK

If there is any part of the horse which can be regarded as of exceptional importance it is the head, for besides being the centre of intelligence, it is also the seat of vice. Moreover, it is the dial-plate on which we find the outward expression of the inward temperament in all its varied moods. It forms, besides, the boundary walls of the most important cavities in the body, notably, the cranium or brain-case, the orbits containing the eyes, the nostrils, and the mouth. From these considerations it becomes obvious that if the several organs with which the head is connected are to perform their respective functions efficiently, ample space must be provided by the bony framework for their accommodation and unrestrained action. Moreover, the head is not altogether unconnected with locomotion, inasmuch as important muscles extending from the arm upward along the neck are ultimately connected with it, and are the chief agents in raising and advancing the fore-limbs during progression. Further, an extensive bony surface is required for the attachment of the muscles of mastication and expression.

Fig. 26 Lean Head, well set on

Quite apart from size, the aspect of the head varies very materially in different animals, not only among those of different varieties, but in a less degree also among different animals of the same variety. While in some it presents a clean-cut, finely-chiselled outline, in others the angles and lines of the bony framework are rounded off and more or less obscured, and the head as a whole displays a heavy, plain appearance. The former, distinguished as the *lean* head (fig. 26), is more especially pronounced in the thoroughbred, and is always an evidence of good breeding. Here the skin will be noticed to be thin, and closely adherent to underlying parts. The bony outline is sharply defined. The muscles, vessels, and nerves are seen standing out in bold relief, giving the head altogether a clean, sharp expression and airy carriage. Quite the reverse is the case

in the latter, which is known as the plain or *fleshy* head (fig. 27). Here the skin is thick, coarse, and united with the parts beneath by a large amount of connective tissue which hides the bony lines and prominences beneath, rounds off the face, and gives to the head as a whole a heavy and fleshy appearance. This type of head is associated with animals of a dull, lymphatic temperament and low cast.

VOLUME AND GENERAL ASPECT OF THE HEAD

In this, as in other respects, harmony of proportion is the point of excellence to be desired, whether it be in the heavy or the lighter breeds of horses. Deviations in this respect, however, are not equally objectionable in the two classes. A large head in the hunter or the hack would not only render an animal unsightly, but by displacing the centre of gravity forward, predispose to stumbling, and impose upon the fore-limbs an undue amount of weight and wear. These objections do not apply to the slow-moving draught-horse, whose powers of traction depend upon the amount of force he can bring to bear upon the collar. Here a large head, if not so agreeable to look at, would be rather an advantage than otherwise, not only because of its extra weight, but because of the larger surface of attachment it would afford those muscles that assist in fixing the front part of the body in the act of pulling.

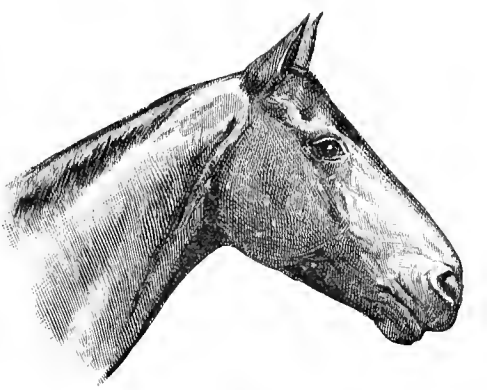


Fig. 27.—Fleshy Head

The size of the head may deviate in proportion either in the direction of excess or deficiency. When the dimensions of length, width, and depth are all in excess the head is said to be large or *coarse*. This condition results more especially from an undue development of the bony framework. It may not, however, be altogether thus caused, but may, in some measure, be due to an exceptional thickness of the skin and superabundance of connective tissue intervening between it and the underlying bones. In the latter case the head has a heavy look, rounded and fleshy in appearance, and the bony lines and prominences, as well as the nerves and blood-vessels, so conspicuous in well-bred horses, are altogether obscured. Animals of this class are usually low-bred, soft, and wanting in endurance. In point of size the head should accurately fit the body, or if it departs at all from the

standard of proportion in its osseous parts, better a trifle too large than too small. A small head in relation to other parts means not only a sacrifice of symmetry, but maybe also of power and intelligence.

FORM OF THE HEAD

The head of the horse presents great variety of form. In order to indicate the defects of conformation of this part it will be necessary in the first place to convey some idea as to those characters which combine to develop the highest standard of beauty and physiological excellence in the whole. In speaking of the "Points of the Horse" we have already referred to the various regions into which the head is divided, and we now propose to examine them as to their magnitude, formation, and reciprocal relations.

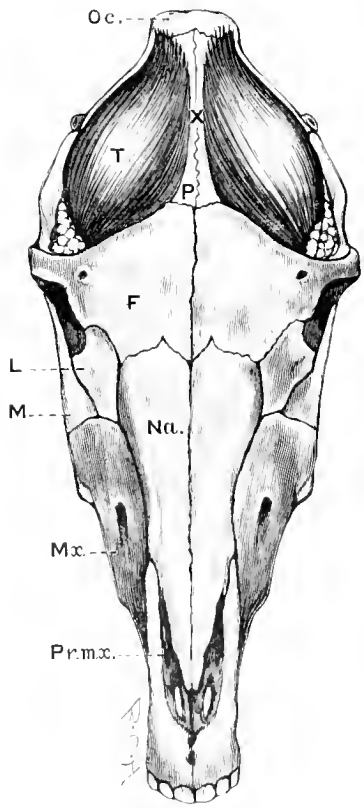


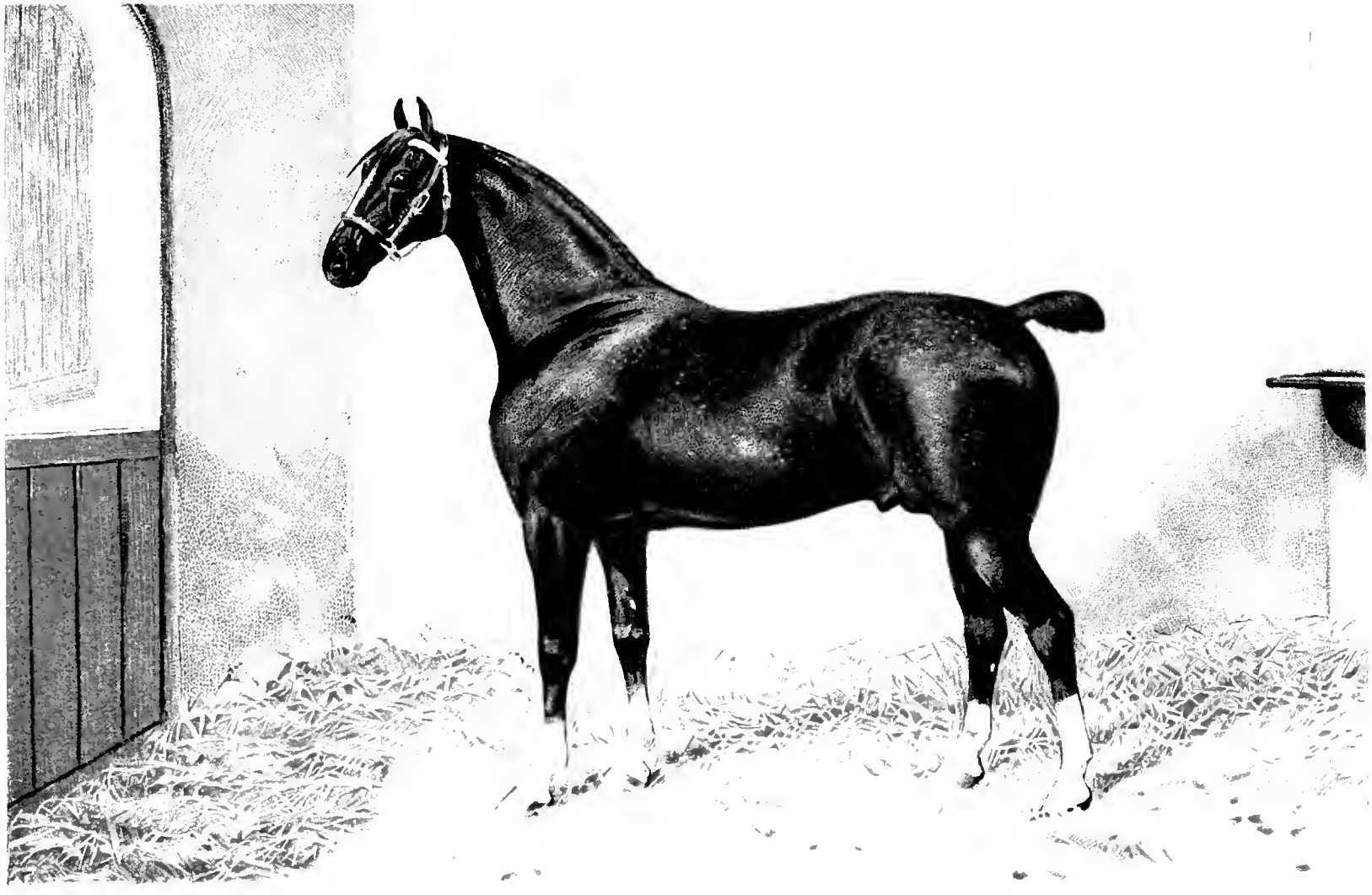
Fig. 28.—Front View of Skull and Temporal Muscles

Oc, Occipital crest. P, Parietal bone. X, Parietal suture. F, Frontal bone. Na, Nasal bone. Mx, Superior maxillary bone. Pr.mx., Pre-maxillary bone. L, Lachrymal bone. M, Malar bone. T, Temporal muscle.

The aspects from which the head will require to be examined are: (1) the anterior or front view; (2) the lateral or side view; (3) the posterior or back view; and (4) the view of the upper and lower extremities respectively.

Viewed from the front (fig. 28) the first and most striking feature is the forehead, whose anatomical relations with the brain, the eye, the breathing organs, and the organs of mastication impart to it such exceptional importance. This division of the head is limited below by a line drawn across the face from the inner corner of one eye to that of the other, from which it rises to the poll or occipital crest.

The forehead should be deep and broad, inasmuch as the bones which form its basement structure not only enclose the brain cavity but two other cavities (frontal sinuses) below it which are part of the respiratory system of organs. A large forehead, therefore, may be taken to denote a large brain and a large breathing capacity.



The former proposition is not accepted by all writers on this subject; but without insisting too much upon it, it seems as reasonable an inference to draw as that a large, deep chest betokens voluminous and capacious lungs. There is no doubt, as pointed out by Goubaux and Barrier, that the temporal muscles, which extend from above the eyes to the roots of the ears and take such an active part in the function of mastication, add somewhat to the transverse diameter of the forehead; but this does not invalidate the argument that a broad forehead is an expression of a broad, and consequently large, brain cavity. On the contrary, the presence of large muscles is an indication of large bones; and since the bones to which these particular muscles are attached form a considerable part of the vault of the cranium, the logical inference is that the cavity of the latter, in respect to size, stands in relation to them. As to whether the intelligence in the horse is proportional to the width of the forehead, or in relation to the volume of the brain, are questions into which we do not propose to enter; but from the foregoing considerations we are in agreement with Gayot that the more voluminous the brain the larger is the spinal cord and the nerves that proceed from it, and that "a large forehead denotes a high degree of intelligence and a good nervous system".

Fig. 29.—Broad Face, lop ears

Fig. 30.—Narrow Face

From the forehead downward the face should still maintain ample width, to give room to the nasal passages which form its front and lower aspect. From the eyes, the lateral boundary lines in a well-formed face will gradually narrow in towards the angles of the mouth and then widen out in conformity with the nostrils, which should be open and capacious. Moreover, the skin encircling the nostrils should be thin and pliable, and the lips fine and mobile. The bony lines and prominences of the face should be clearly defined, and not, as seen in the low-bred and phlegmatic subjects, hidden by undue thickness and fleshiness of the skin and subcutaneous tissue.

Viewed in profile, the face from the forehead downward will be found to vary very considerably. In the thoroughbred and the Arab it is usually *straight* or inclining to hollowness beneath the eyes (fig. 31, and Plate V); while in the coarser breeds the disposition to convexity is more and more noticeable as we approach the heavy draught-horse. As both these formations are quite consistent with the most perfect physiological activity of the cranial and respiratory organs, any preference that may be given to one over the other can only be regarded as a matter of taste, and not as having any intrinsic value; for our own part we prefer that the line of the face, when viewed in profile, should be neither uniformly straight nor convex, but commencing above in a bold forehead, should gently recede in its course downward, and again rise to slight convexity over the lower region of the nose, giving to this aspect of the head a gentle and graceful undulation (fig. 32).

Fig. 31.—Straight Face (Arab Stallion)

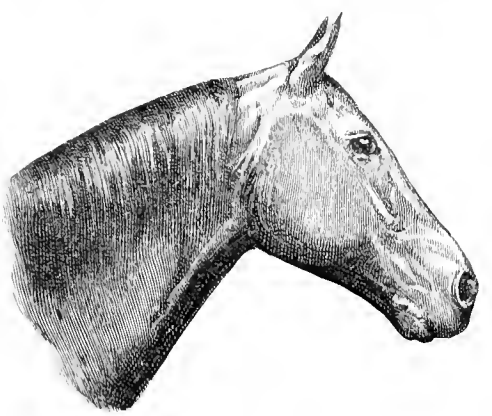


Fig. 32.—Undulating Face

While making observation in profile it is requisite to note that the branches of the lower jaw should be broad and deep, since they give attachment both within and without to the most powerful of the muscles of mastication. Moreover, viewed from behind they should be set well apart and clear of the neck, so that the larynx or upper portion of the windpipe, which is situated between them, as well as the pharynx or throat, may have ample space in which to move while the head is being bent, or turned sharply from side to side.

Undue narrowness of this region, when occurring in horses with short, fleshy necks, tends to embarrass breathing, especially when the animal is tightly reined up. In some high-couraged and nervous animals of this

conformation, respiration becomes loud under exertion, and may even emit a distinctly roaring noise.

Although not defects in the sense of interfering with function and utility, there are to be noticed certain extremes and irregularities in the lines of conformation of the head which seriously detract from its beauty both of symmetry and expression.

Fig. 33.—Arched Face

In this connection the face may be immoderately and uniformly convex from the forehead above to the nostrils below, when it is said to be *arched* (fig. 33)—a type of conformation at one time common in the English draught-horse, but now fast disappearing under the ægis of the show-yard and the stud-book. Undue prominence commencing between the eyes and extending to the same point constitutes the *Roman Nose* (fig. 34), to which the same observations apply. The reverse condition, in which the face is hollowed, is sometimes spoken of as *dished* (Plate V, fig. 1).

Fig. 34.—Roman Nose

In some extreme instances of this latter formation, function is more or less interfered with under severe exertion, and the powers of endurance are in some degree curtailed. Moreover, such animals are often said to be roarers in consequence of the narrowed nostrils rendering the breathing loud and coarse. They are not, however, roarers in the proper sense of the term.

The face may be rendered irregular and even unsightly by an undue prominence of the lower forehead, which it may be noted is usually associated with narrowness of the part and gives the face a heavy, ill-natured expression. Especially is this so where the eyes are small and laid back in the orbit. A rise in the face between the eyes (fig. 35), when considerable, not only affects the contour of the face and detracts from its beauty, but is regarded by some as significant of temper if not of vice, the truth

of which, says Captain Hayes in his excellent work on *The Points of the Horse*, "I have seen verified in many instances".

Ears.—Besides the special function for which they are designed, the ears are not only an element of beauty, but by their movements serve to indicate the emotions and temperament of the animal. Their effectiveness as a mark of beauty will be influenced very much by the transverse diameter of the poll, and the manner in which they are set on, as well as by their form, dimensions, and carriage.

Fig. 35.—Forehead prominent between the Eyes

When well set apart on a fairly broad crest and carried with a gentle inclination forward without being either upright and staring, or too dependent and heavy, they set off a well-formed head to the greatest advantage. As to length, connoisseurs are not exactly in agreement, some extolling the excellence of short ears, and others of long ones. There can be no doubt, however, that with this, as with all other organs, they must be in harmony with related parts. A long head with short ears is as unsightly as when the proportions are reversed, and the disfigurement is materially added to in either case where they present a broad, thick, fleshy character and an investment of coarse hair. Ears of medium length and width, thin, flexible, neither too pointed nor too rounded at the tip, well set up on a good base, active and alert, are not only marks of good breeding, but impart to the face an expression of lightness, brightness, and intelligence.

Fig. 36.—Long Ears

In most horses the temperament finds expression in the movements and disposition of these organs. In the nervous and excitable they are ever erect and respond to every sound, moving vigorously from one

position to another with rapid succession; while in the dull and lethargic their movements are slow and not easily awakened, and their general carriage is heavy and drooping.

The backward set of the ears is frequently indicative of vice, and forms a feature in the kicker and the rogue, but is also seen habitually in some of the best-tempered and most tractable of animals.

The general activity in the movement of the ears is a striking feature in the case of blind horses, whose sense of hearing would seem to become more and more acute as the loss of sight becomes more complete. Every sound engages the attention where vision is lost, and the ears are kept in a state of constant activity, moving first in one direction and then in another, the head at the same time being inclined in this direction or in that, to bring the ears more immediately in line with the source of the sound. Moreover, in these cases the head is carried high, and the fore-limbs, which are raised well from the ground, appear to dwell in their forward movement, or in other words, the horse conveys the impression of feeling his way, and lacks the free, bold forward action of one with perfect vision.

LENGTH OF THE HEAD

A head otherwise proportionate to the body may exhibit excess or deficiency of development in the direction of its length, *i.e.* it may be too long or too short. All Continental observers have accepted the conclusion of the distinguished Frenchman Bourgelat, that two and a half times the length of the head should be equal to the distance from the withers to the ground and from the point of the shoulder to the point of the buttock. If the head fails to equal these dimensions it is said to be too short, and if it exceeds them it is too long. Captain Hayes avers that a more practical rule is to compare the length of the head with the depth of the body at the lowest point of the back. "In a well-shaped horse", he observes, "which is not in gross condition these two measurements are very nearly equal."

There can be little doubt that any great excess of length in this part, situated as it is at the extremity of the neck, would not only disturb the harmony of conformation, but by adding to its weight expose the fore-limbs to additional wear. It is also conceivable that by displacing the centre of gravity forward it would in some degree restrict their liberty of action and adversely influence the pace. Moreover, horses with this fault are liable to carry themselves indifferently and to bear unduly on the bridle. While this disproportion is specially objectionable in the saddle-

horse and the harness-horse, it is not so in the draught-horse, where any extra weight at the end of the cervical lever may be turned to good account by being thrown into the collar as a means of traction.

The disadvantage of excessive length will be somewhat modified when the head is set on a short neck, and aggravated when it is attached to a long, lean one. A head too short, although a fault of proportion, presents some compensating advantages in its lightness and greater mobility.

COUPLING OF THE HEAD

Given a well-formed head, the next point of importance is the manner of its adjustment or attachment to the neck. However good it may be in proportion and outline of form, if it is badly hung the general appearance of the animal will be seriously impaired.

A head should be attached on to the neck and not into it: the angle of the jaw should stand clear away from the throat, which should meet the head at a nice curve and not at an acute angle. When the former relations exist, the line of demarcation between the one and the other is marked by a well-defined groove extending from below the ear downward to the throat, and the carriage and movements of the head in every direction are executed with freedom and enjoy ample range of action. The two principal departures or defects of conformation which occur here consist in (1) too loose and (2) too close coupling. In the former the head is too disconnected from the neck or loosely hung (fig. 37), the groove referred to above is deep and wide, and commonly the neck is long and wanting in strength and muscularity. This defect of conformation is frequently seen in horses light in the middle, long in the leg, of irritable temperament, and wanting in general muscular development and vigour of constitution. Many of such are roarers. In the latter the attachment of the head to the neck is close and deep from poll to throat, the intervening groove is superficial, narrow, and ill-defined, and the union of the two parts is close and compact (fig. 38). Such a conformation not only detracts from the beauty of the fore end, but seriously curtails the range and liberty of movement of the head in

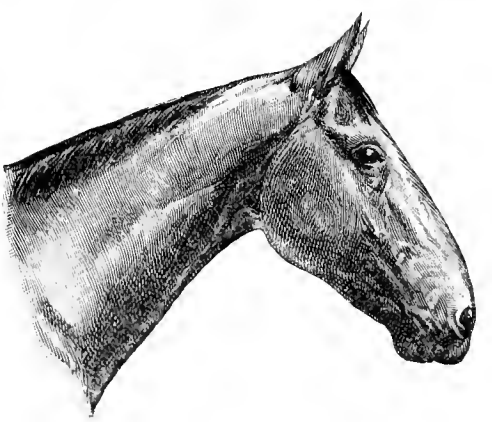


Fig. 37.—Head loosely Coupled

every direction. Moreover, horses so made are mostly heavy in hand, besides being stiff and ungainly in their side movements.

The direction of the head in relation to beauty and usefulness is no less important than its mode of attachment, and it will be correct to say that the one is in some degree influenced by the other. It may be difficult to state precisely what is the most classical disposition of the head in this respect, but we agree in the suggestion of Goubaux and Barrier that "the head has a good as well as a natural direction when it extends obliquely from above to below, from before to behind, and forms with the ground surface an angle of about 45 degrees" (fig. 26).

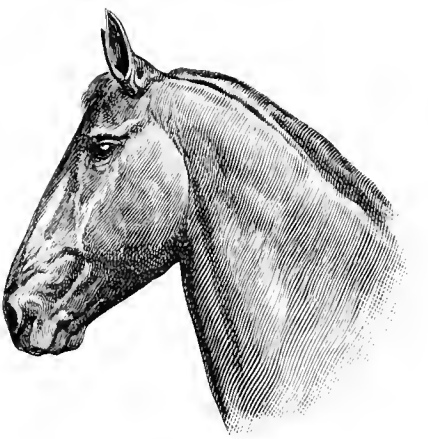


Fig. 38.—Head close-coupled

This position, besides being favourable to an extensive range of vision, gives the animal a good view of the ground before him over which he is travelling, and at the same time confidence and safety in movement.

The disposition of the head is very considerably influenced by the conformation of the neck. In that condition known as "ewe-neck" (fig. 42) it frequently assumes a horizontal direction, or, to use a stable phrase, is carried with the nose more or less "poked out".

It results from this attitude that bridle control is very materially diminished or may be altogether lost, on account of the too backward displacement of the bit, which is made to act either directly on the angles of the mouth, or, what is worse, on the first molar teeth.

Cross-tempered horses of this type are apt to seize the bit in their grinders, in which case all attempts to restrain them are vain. Moreover, the direction of the line of vision being set high, obstacles and irregularities on the ground surface immediately before them are liable to be overlooked, in which case stumbling becomes habitual and dangerous.

The direction of the head approaches the vertical line very much in proportion to the degree of curvature of the neck (fig. 39), and in some cases, where the latter is unduly arched, the former may even take an oblique direction from before, downward and backward, so that the chin is made to approximate the breast. This conformation not only hinders progression by displacing the centre of gravity backward, but the animal becomes unsafe both on account of his liability to stumble and the difficulty which, in extreme cases, is experienced in causing him to turn to the right

or to the left. For the purpose of draught the vertical disposition of the head does not constitute a serious defect, but in animals used for riding and driving purposes it is most objectionable. Among other reasons, the range of vision in these cases is restricted, and although the ground immediately in front of the animal is well in view, distant objects in the line of vision are not so well observed. Horses of the kind in question usually bend their knees fairly well, but the action is short and choppy, and lacks liberty and range of shoulder movement.

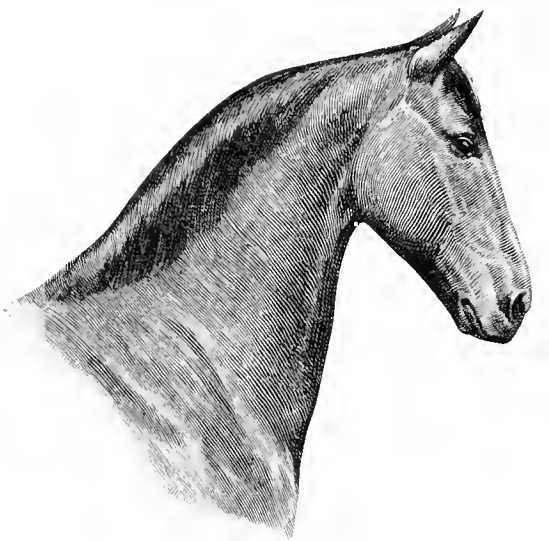


Fig. 39.—Head carried vertically

CARRIAGE OF THE HEAD

The carriage of the head will be determined for the most part by the form of the neck and the way in which it is connected with it. The most finished appearance is given to the animal when the head is carried well up, with a gentle slope from above downward and forward, forming with the ground surface an angle of about 45 degrees. In this position the field of vision is not restricted as when the head is directed straight out, or brought towards a vertical position, or where, as sometimes occurs, the chin is directed towards the breast. At such an angle, too, the head enjoys an amount of freedom and mobility which would be impossible in certain extreme departures towards the vertical and horizontal as depicted in figs. 39 and 42. It will also be obvious that with the angle of the throat well open, the larynx will have plenty of play and the breathing be correspondingly facilitated. The head thus favourably placed confers the further advantage on the rider and driver, of more complete restraint and guidance by allowing the bit to fall upon the bars instead of being drawn into the cheeks, where it may be seized by the "grinders" and removed beyond their control.

When the head is carried well up in a natural manner, the elevation of the shoulder and the forward swing of the fore-limb as a whole are greatly increased. Moreover, as we have elsewhere pointed out, by raising the head the muscle attached to it (*mastoido humeralis*), which is mainly concerned in lifting the shoulder, is made to contract through a greater

distance, and therefore to raise the limb correspondingly high and bring it into position for the execution of a great forward stroke. Carried in a low depending position, the head displaces the centre of gravity forwards, encumbers the fore-limbs, diminishes both speed and action, and robs the horse of the most elegant feature of his fore end.

NECK

Apart from any consideration of mechanical advantage which it may confer on a horse as a living motor, a good neck is an attractive feature in every variety, from the smallest pony to the heaviest "shire". It is, however, in the driving-horse and the saddle-horse that the special elegance and beauty which it is capable of imparting are more especially demanded; but it must be observed that in associating these two types it is not intended to convey the idea that the configuration of neck best suited to the one would be equally appropriate to the other, nor that either would be adapted to the horse of heavy draught. On the contrary, in each case the neck must be constructed to meet the special purposes for which the animal is intended.

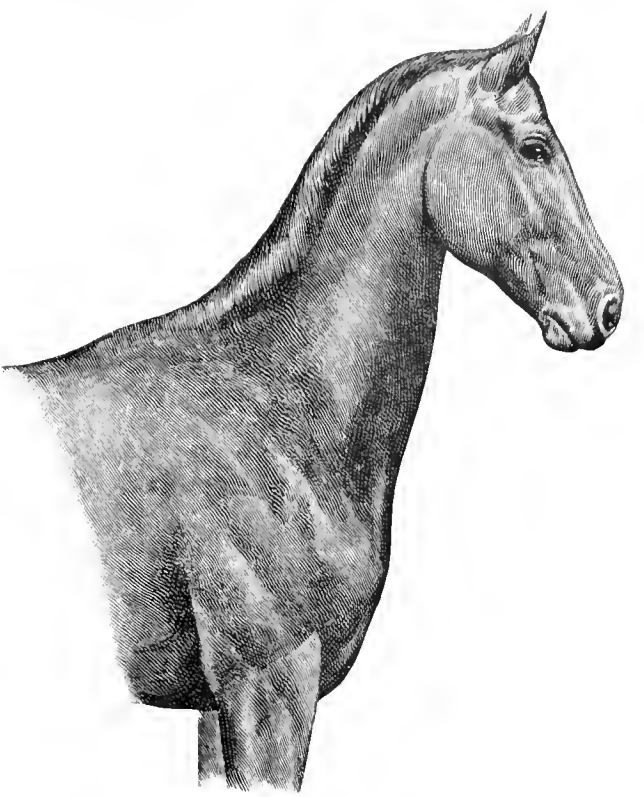


Fig. 40.—Swan Neck

The form of the neck, as everyone knows, varies very considerably in different animals, and also in the same animal at different periods of life; hence it is designated *arched* (Plate 1, fig. 2) when the upper border describes a convexity along its whole length from the poll to the withers; *swan-neck* (fig. 40) when the curve is confined, as in the neck of the swan, to the superior part; *straight* (fig. 41) when the superior and inferior borders are rectilinear; and *cwe-neck* (fig. 42) when the upper border is

concave. The form of the neck not only influences the carriage of the head, but may in some measure conduce to speed and modify action. The last two varieties are especially favourable to rapid movement since they allow of a more considerable extension of the head beyond the base of support than the others.

When the neck is arched the head is disposed towards the vertical position, sometimes so much so as to materially limit the range of vision, so that objects at a distance are not observed. Moreover, "the arched and the swan neck, by their tendency to curve the vertebræ in the shape of an S, diminish the length of the neck, move the centre of gravity backward, and are more favourable to its elevation and depression as well as to the lateral displacement of the trunk. They also offer advantages in the saddle-horse, in which grace, brilliancy, and extent of movement are preferred" (Goubaux and Barrier). Arching of the neck, although for the most part a natural conformation, may also be imparted by appropriate schooling, or increased where it already exists. The training resorted to for this purpose has the further advantage that the various manœuvres of which it consists impart to the neck a suppleness and mobility which greatly enhance the rapidity, elegance, and precision of the animal's movements altogether.

Fig. 41.—Straight Neck

CARRIAGE

Whatever may be the form of the neck, the appearance as well as the special fitness of an animal for any particular purpose will be greatly influenced by the manner in which it is carried.

In this connection it will be found to vary towards the high or vertical position on the one hand, or the low or horizontal position on the other. In either direction extreme examples are objectionable, although in estimating the extent of depreciation from either cause, compensating conditions, if any exist, must be fully taken into account. A neck well carried

SHORT NECK

LONG NECK

not only lightens and brightens the outlook of a horse, but it gives him an expression of energy and courage. Moreover, in this attitude the head receives ample natural support, is light on the rein, and relieves the hands of the rider or driver of an objectionable and tedious burden so common in animals otherwise formed. There is the further advantage in an elevated carriage of the neck, that the muscle chiefly concerned in raising the arm (*mastoido humeralis*, fig. 43), and which is connected above with the head, enjoys a greater range of contraction by virtue of its increased length, and by bringing the shoulder well up increases in a corresponding measure the upward and forward movement of the limb as a whole. It conduces, indeed, to that free shoulder-play and fine knee action which all lovers of horses so much admire and enjoy.

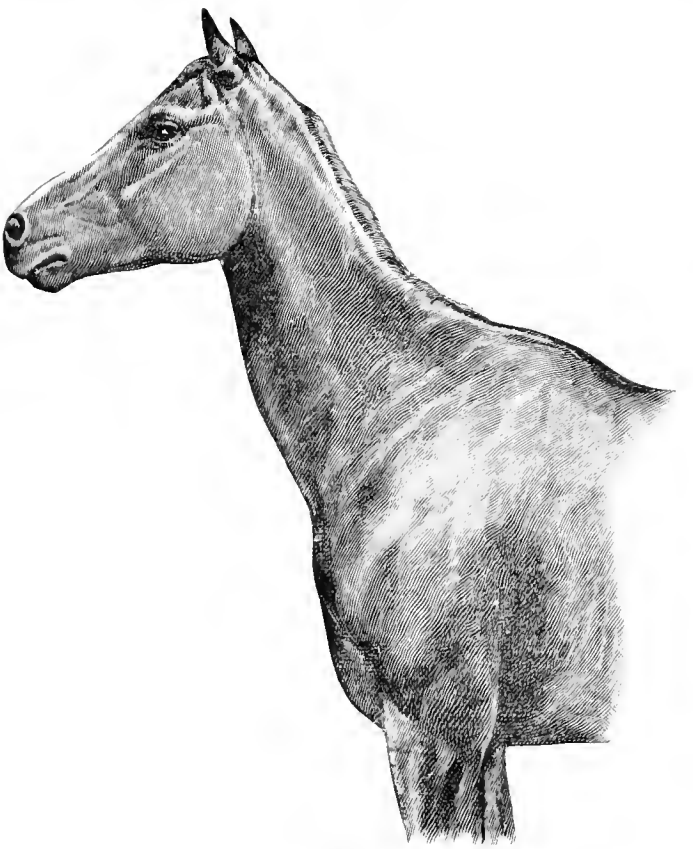


Fig. 42.—Ewe Neck

The "nagsman" with his sharp bit, the "runner" with his raised hand propping up the horse's chin, and the coachman with his overdraw check-rein, all recognize the influence of an uplifted neck on the action of the fore-limbs; but it must be noted that while these artificial devices conduce to a more lofty action they at the same time shorten its range, and, by imposing restraint on the head and neck, deprive the gait of the liberty and elegance of movement displayed in a natural carriage.

With the neck directed forward and carried in a more depending position it is otherwise. Here the head hangs heavily on the neck, the shoulder action is restricted, there is a lack of mobility, and the animal is heavy in hand, and may be hard in the mouth and difficult to guide. Beyond this

some consideration will require to be given to the neck in regard to its length and volume.

A neck too long or too short not only disturbs the harmony of proportion, but impairs to a greater or less extent the mechanical properties of the machine. Undue length is not infrequently associated with a slight muscular development, giving to this region a gaunt, slender appearance. Moreover, it possesses the further fault of imposing on the fore extremities an excess of weight, thereby impeding action and increasing the wear and tear of the limbs. More especially is this the case where the neck is carried in a forward direction. To some extent the disadvantage of a long neck is compensated by an erect carriage, which, by displacing the centre of gravity backward, lightens the burden in front, and at the same time gives a light and easy hold to the rein. While recognizing the objectionable features of excess, ample length is nevertheless indispensable to speed, action, and brilliant carriage.

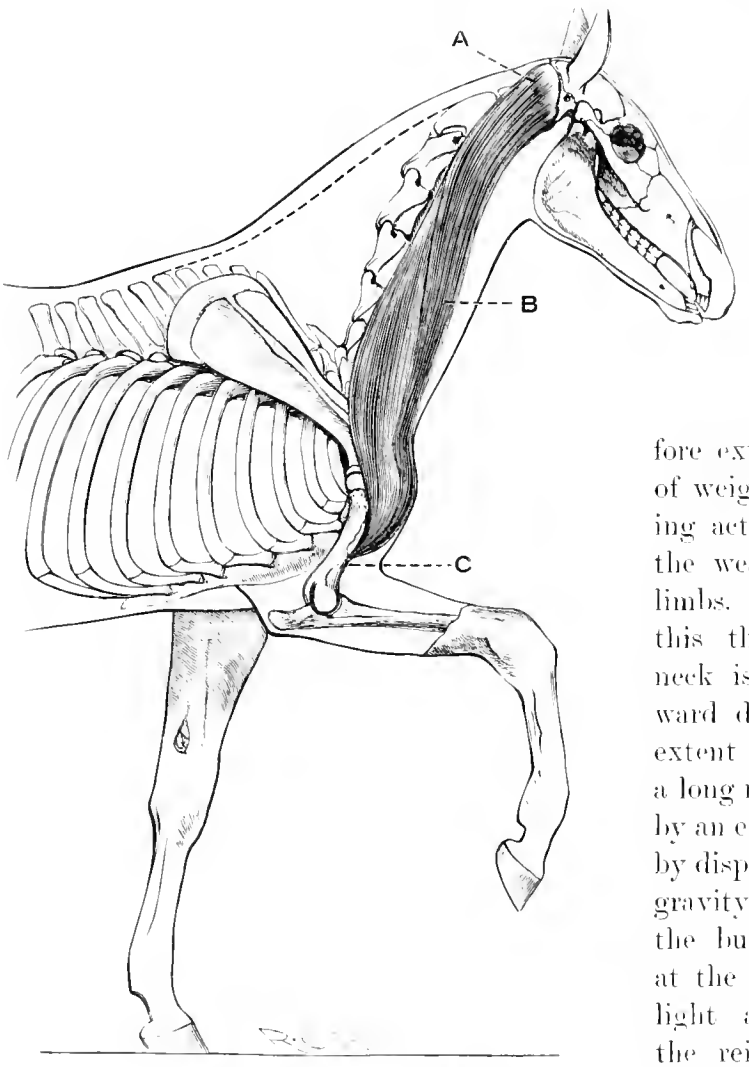


Fig. 43.—The Mastoido-humeralis Muscle

A, Attachment to head. B, Body of the muscle. C, Attachment to the humerus or upper arm bone

In the race-horse a long neck is especially requisite, for, as we have seen, the range of action of which the shoulder is capable, and the forward movement of the fore-limbs, will be mainly determined by the length of the muscle (*mastoido humeralis*), which, starting above from the back of the

head, is regulated by the length of the neck. The neck in some respects is to the horse what the balancing-pole is to the gymnast, viz. a means of maintaining equilibrium of the body in the performance of its varied movements. This is strikingly illustrated in the swing of the neck from side to side in the walk, its elevation when the body is raised from the recumbent posture, its rapid alternation from one side to the other in turning to the right or to the left. Ample length gives pliability to the neck, and enables it to respond quickly in regulating the centre of gravity while the body passes from one attitude to another. Moreover, it renders the animal easy of control, and imparts to the movements steadiness, ease, and grace,—qualities which the riding-horse and the driving-horse should both possess to be worth anything.

A short neck, for reasons stated above, is not conducive to rapid movement, nor to that mobility of the body which is seen in more extended proportions. Moreover, lack of length is usually identified with great muscular development, by which the part is rendered heavy and wanting in pliability. It is not to be understood that shortness in this region is altogether inconsistent with a fast pace, but since in this condition the range of action in the fore-limbs is considerably diminished, its repetition must therefore be greatly increased to make up the difference, thus adding to the wear and tear of both body and legs.

In the draught-horse, whose movements are slow, and whose highest attribute is the energy and power he can put forth, any disadvantage resulting from a short neck is compensated where the muscles clothing it are massive and strong.

Besides the length and carriage of the neck, the expert judge of horse form will not lose sight of the importance of its mass. A strong, heavy, muscular neck in the case of the slow-moving draught-horse is, as we have seen, an attribute of strength, and therefore a condition suited to the purpose for which the animal is required; but to the race-horse, the chaser, the hunter, and the hack any surplus weight attached to the cervical lever will not only interfere with progression, but materially add to the wear and tear of the fore-limbs. For these and other reasons the neck in the cases indicated should be long, light without being weak, and carried well up. If at the same time it is surmounted by a well-proportioned head the best conditions appertaining to this region will be secured.

THE WITHERS

As we have elsewhere indicated, the withers comprise that more or less elevated portion of the spine situated between the back and the neck, and supported on either side by the upper extremity of the shoulders. In form, extent, and character they are liable to considerable variation, according to the age, sex, and type of the animal. In early life this region is but slightly marked, but it becomes more and more conspicuous as the animal advances towards maturity, and the bony framework is developed. It is more prominent in the male than in the female, and more sharply outlined in the gelding than the stallion.

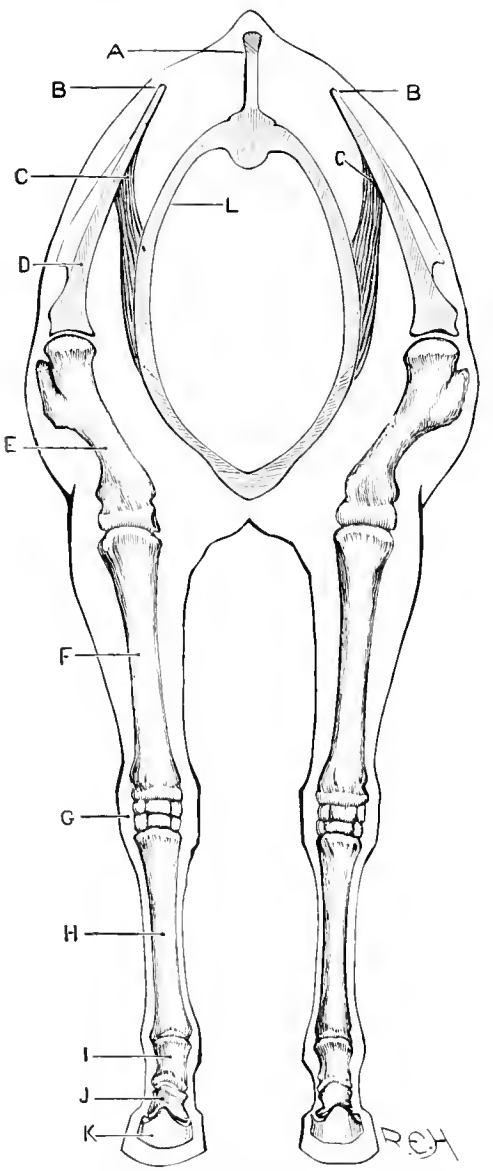


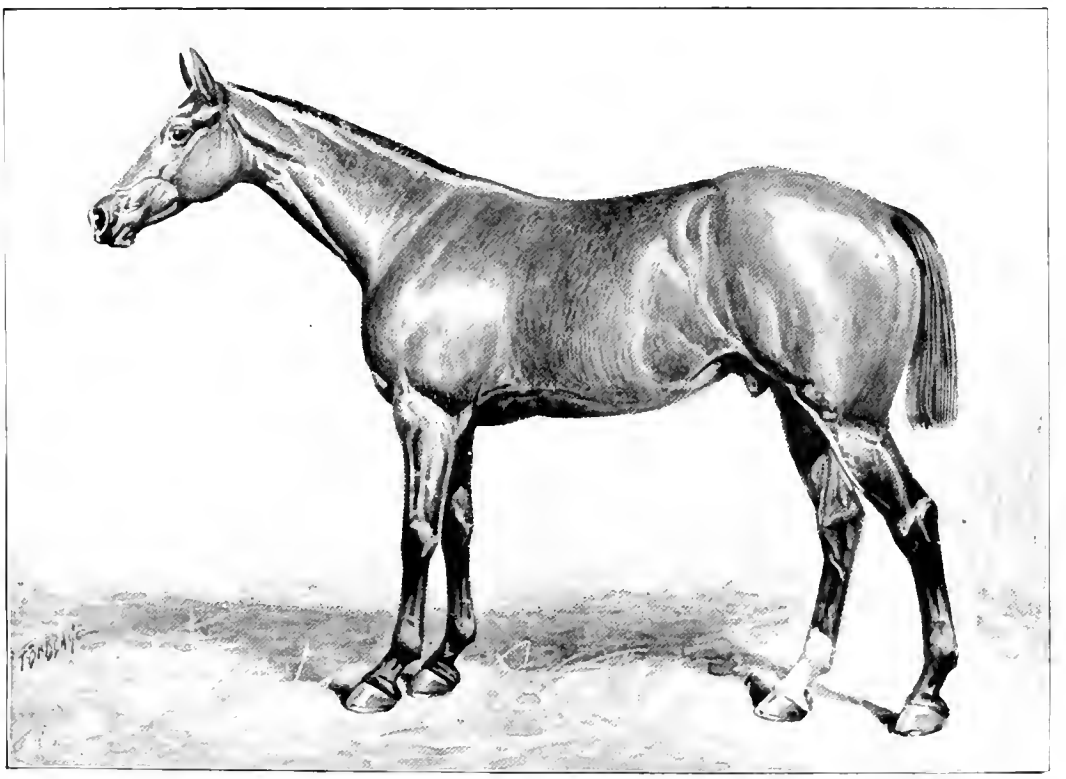
Fig. 44.—Section through the Chest, showing suspension of the Trunk between the Fore-limbs

A, Vertebral spine. B, B, Scapular cartilages. C, C, Suspending muscles. D, Scapula or blade-bone. E, Humerus or upper arm. F, Radius or lower arm. G, Carpus or knee. H, Large metacarpal bone or canon. I, Os suffraginis or long pastern. J, Os coronæ or coronet bone. K, Os pedis or foot bone. L, Rib.

The character of the withers, although somewhat variable in the members of each class, is very much influenced by breed. In the thoroughbred they are marked by considerable elevation and refinement, while in the commoner breeds they are more or less low, fleshy, and thick. Between the two extremes there are numerous intermediate forms. When the withers are high, and thin from side to side, they are spoken of as being "fine" or *sharp*. When they are low and thick, they are described as *coarse*.

Height of the Withers.—The height of this region is determined for the most part by the length of the dorsal spines, and their prominence above the level of the

HIGH WITHERS



LOW WITHERS

scapular cartilages will be in proportion as the fore part of the body is suspended higher or lower between the fore extremities.

Reference to fig. 44 will explain how the trunk, suspended by muscles between the two front legs, may vary in height in different animals, and how, in consequence, the withers are rendered more or less prominent.

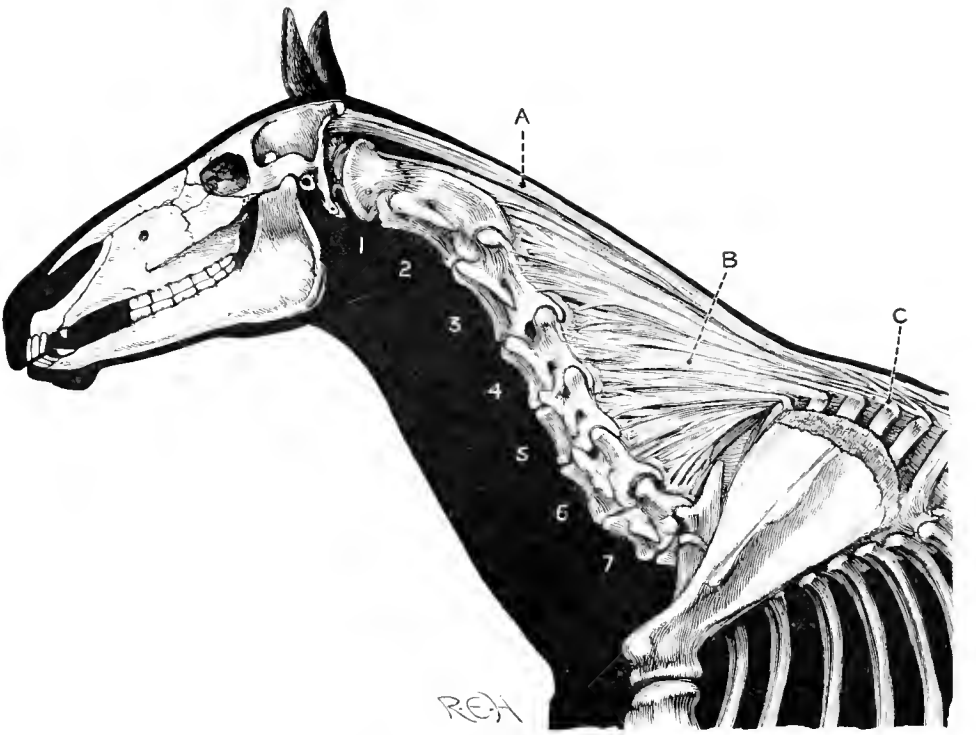


Fig. 45.—Ligamentum Nuchæ

A, Cordiform portion. B, Lamellar or flat portion. C, Attachments to dorsal spines. Nos. 1 to 7, Cervical Vertebræ.

The elevation of A increases the height of the withers in proportion as the trunk is set higher or lower between the supports B B.

The importance of the withers as an element of conformation will be best understood when considered in respect to their anatomical relations.

By reference to fig. 45 it will be seen that the great elastic ligament which gives passive support to the head and neck is implanted into the summits of the bones forming this region.

Muscles which raise the head and neck, and move it from side to side, as well as others which elevate the shoulder and extend the spine, are also connected with it. The freedom and energy with which these parts are capable of acting is greatly increased when the withers are high, since the bony lever upon which they act is lengthened, and their contraction

is rendered more effective in its results. In addition to being high, the withers should also be ample in length from before to behind, and sloped so as to fall well into the back.

Ample depth and backward inclination of the shoulder are usually found where the withers are high and sloping. Under these conditions it results that the head is well carried, the fore end heightened, the play of the shoulder increased, and greater liberty is given to the entire body. It must, however, be noted that the advantages of height in this region will be more or less discounted in riding-horses if the withers are unduly thin, owing to the difficulty in protecting them against injury by the saddle.

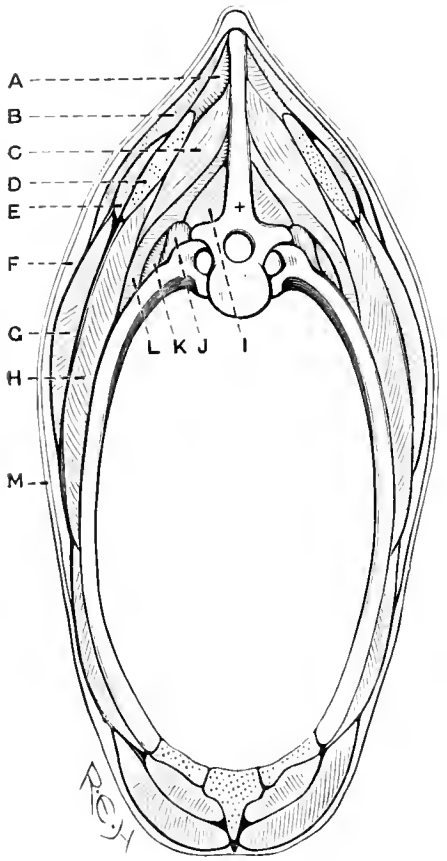
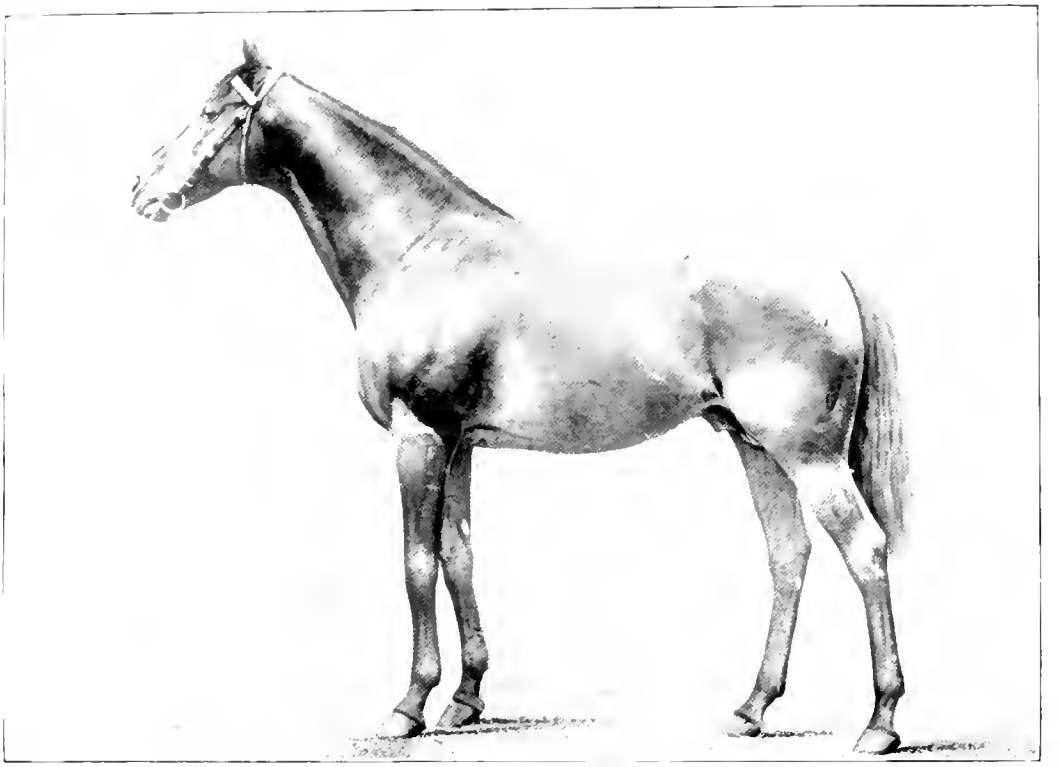


Fig. 46.—Section through the Withers

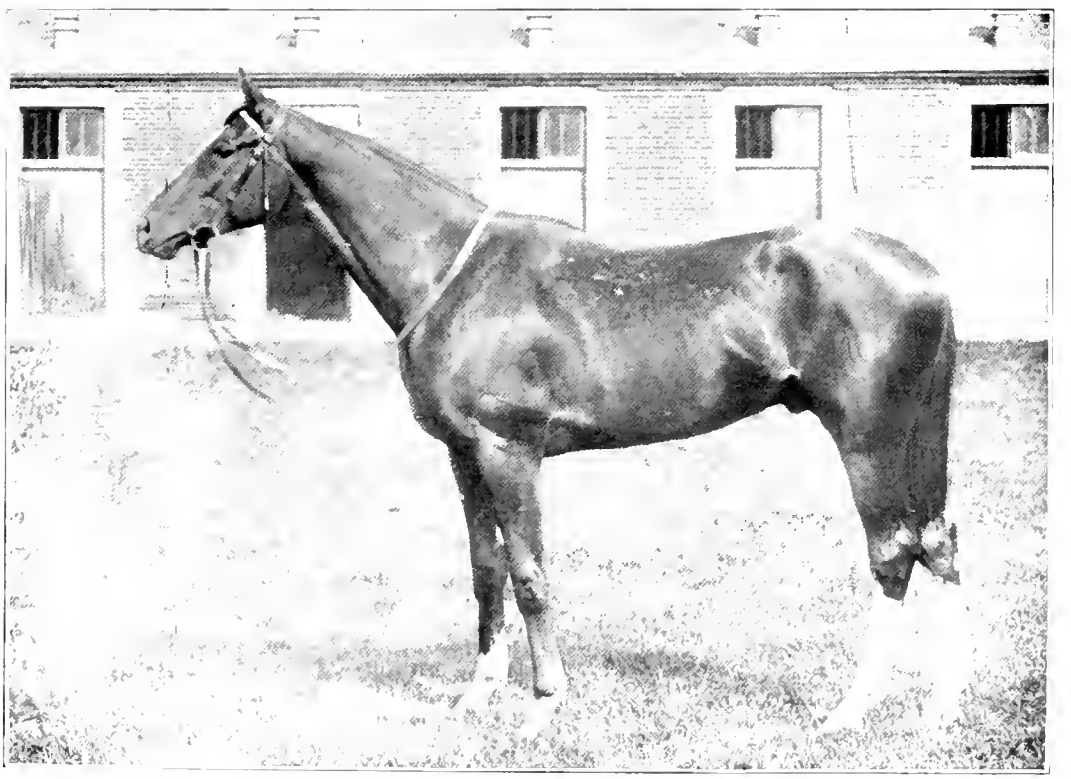
A, Rhomboideus. B, Cervical trapezius. C, Longissimus dorsi. D, Scapula. E, Infra spinatus. F, Panniculus. G, Latissimus dorsi. H, Serratus magnus. I, Interspinales dorsi. J, Levatores costarum. K, Transversalis costarum. L, Serratus anticus. M, Skin.

Coarse Withers are characterized by undue thickness, besides which they are usually low and wanting in length and backward slope.

In animals so constructed the head and neck are badly carried, the shoulders lack liberty and range of movement, and the action of the fore-limbs is restricted. Moreover, withers when low (Plate IV, fig. 2) and coarse are exposed to injury from forward displacement of the saddle, and the imposition of undue weight on the fore-limbs not only impairs the action, but adds materially to the wear and tear of the legs. It must not, however, be concluded that the indifferent qualities referred to are necessarily identified with coarseness. We frequently see horses with thick, coarse withers but still possessing ample height, length, and obliquity, and maybe a well-disposed shoulder, which, however, it should be observed, has the defect of being *always* more or less loaded. In these examples the neck also tends to coarseness, and although the action of both shoulders and knees may be ample, it is usually of the heavy-dwelling order, and badly sustained. Coarseness of this region is often identified with animals of a low type, which, while being deficient in energy, display a marked ten-



SHORT BACK, DISHED FACE



LONG BACK

dency to fatten, and a "soft", or, as it is sometimes expressed, a "washy" constitution. Horses of this cast are difficult to "condition", and lack power of endurance.

In the cart-horse, whose movements are slow and whose value centres in the power he is capable of developing in draught, coarseness of the withers, indicating as it does great muscular development, is a point of excellence rather than a defect; and when, in addition, this region is of good height and length, the mechanical advantage is still further enhanced.

A glance at fig. 46 will assist in explaining the conditions which determine the coarseness or fineness of the withers.

From the above it will be seen that in the anatomical composition of this region there are a variety of structures. Centrally placed appear the spines of the vertebræ; outside these, right and left, a quantity of muscular tissue, being parts of several muscles here belonging; then come the scapular cartilages, followed by another layer of muscle, and finally the skin which encloses the whole. It is to these parts, and to the fibrous tissue which binds them together, that the withers owe their thickness or thinness, and in proportion as they are more or less bulky will the one or the other condition prevail.

THE BACK

The back is essentially the weight-bearing region, and as such is of the first importance to the utility and beauty of the horse. Moreover, it is through the spinal column that the body is propelled by the hind extremities in its forward movements, and by the muscles which clothe it that the trunk is raised from end to end, and the weight imposed upon it supported in executing the different paces.

The extent of the back is limited in front by the withers, behind by the loins, while its width is determined by the arches of the ribs.

Length.—It is generally conceded by the best judges of horses that the back should be short, but what degree of shortness is desirable is a question upon which writers at any rate are not in agreement. "In all cases", says Captain Hayes, "the horse's back and loins should have the appearance of being as short as possible", and most authors who have written on this subject pretend that shortness of the back constitutes its beauty. H. Bouley has very judiciously asserted that this proposition is too absolute. "A very short back is not desirable except in animals destined to carry heavy weights, as the shaft-horse, the pack-horse, and the saddle-horse."

In this we quite concur, recognizing that a back too short not only brings the anterior and posterior limbs too much in proximity with each other and reduces the base of support, but by diminishing the length of the muscles which act upon the limbs from the trunk and the great propelling muscles of the back, materially reduces the capacity for speed.

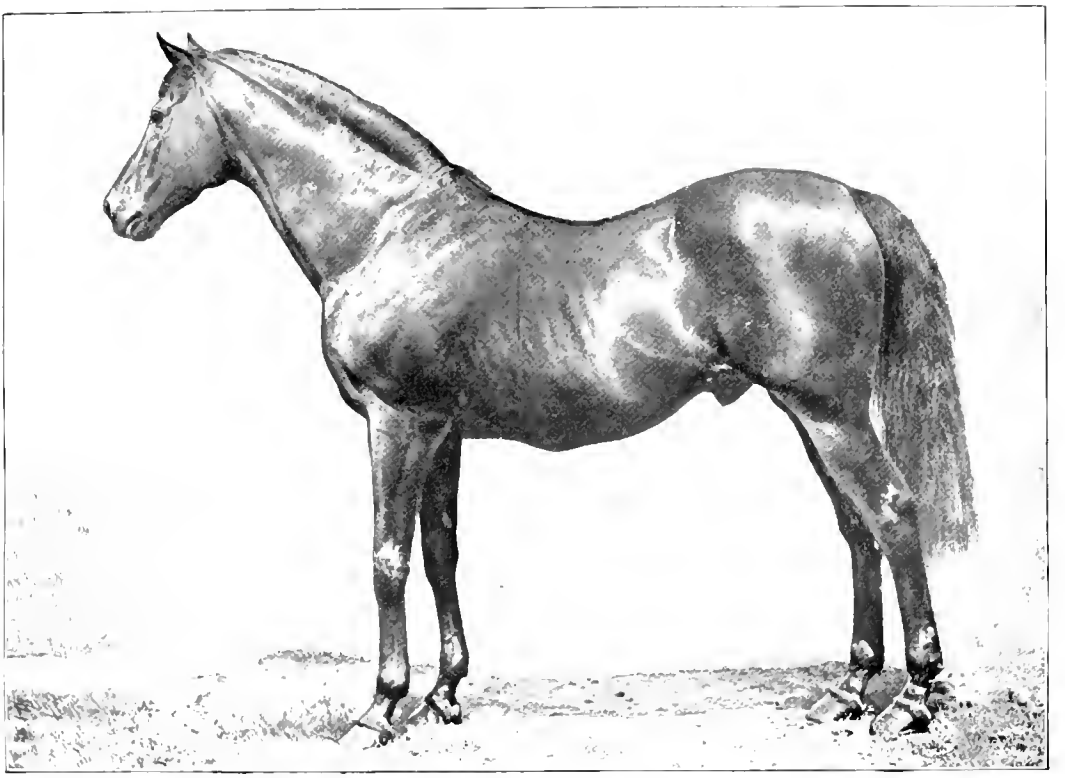
Beyond this, the back, when unduly short, although possessing great stability and power, lacks the suppleness and elasticity which more extended proportions afford. It should also be pointed out that the length of the chest being in conformity with the length of the back, which forms its roof, any deficiency in the latter will materially diminish the capacity of the former. In this connection, however, some compensation may be assured if the chest be deep and the ribs well arched.

A back of too great length is an evidence of weakness, and is frequently associated with legginess, lightness of muscle, and want of stamina. It lacks solidity and resistance to the weight imposed upon it, and under stress of work tends to become depressed and hollow. The disadvantages of a long back are minimized when it is wide and muscular, and supported by short, strong loins. Ample width is at all times essential to a good back. Any shortcoming in this respect is identified with corresponding deficiency of power in the back muscles, and narrowness of the chest. When this region is very narrow the spinal ridge is prominent and sharp, and liable to injury from the saddle, which is always badly carried; moreover, the sides are flat and the chest consequently deficient in capacity.

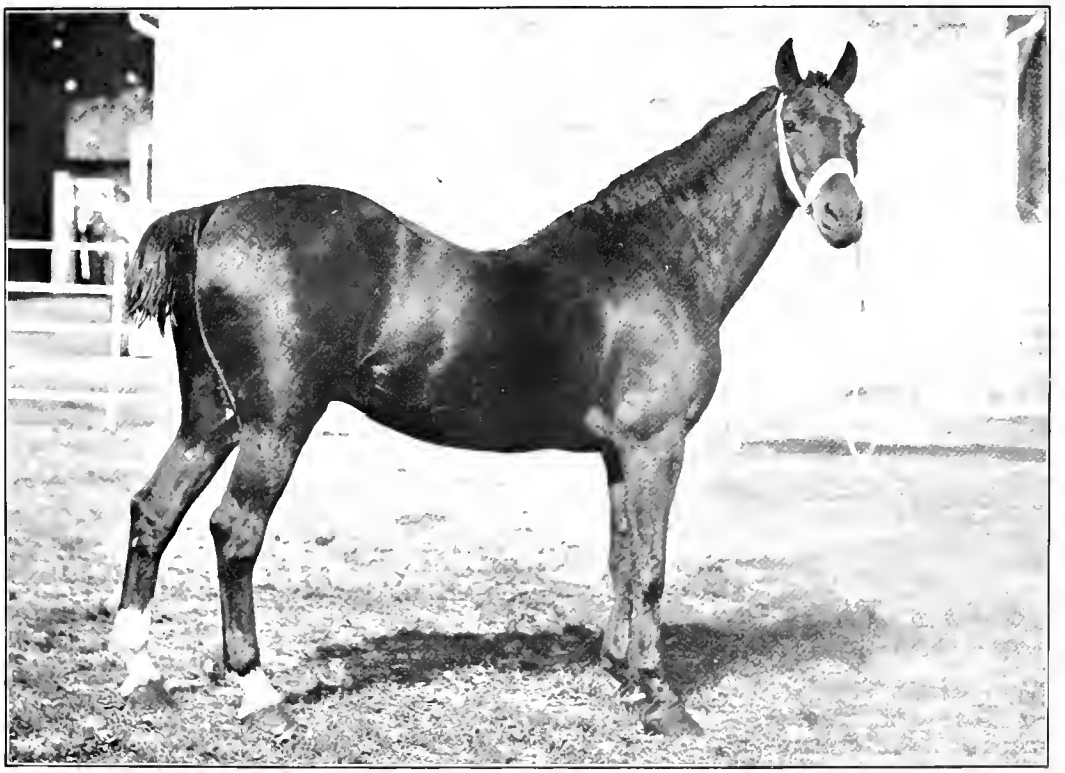
Loins.—The loins comprise that portion of the spine interposed between the back in front and the croup and haunches behind. Below, it is in relation with the flanks.

"Whatever may be the work the animal is destined to perform, the loins should be as short as possible, a condition of solidity important to recognize, because the lumbar vertebræ have no support laterally from the ribs, as in the case of the backbones, being simply articulated one with the other. Its shortness also favours the impetus transmitted by the posterior limbs to the spine, because it lessens the elasticity and mobility of the structures through which the force of impulsion must pass. As to the relation of the entire length of the dorso-lumbar region the back should be *long* and the *loins short*, especially in saddle- and pack-horses."—Goubaux and Barrier.

When the loins are short and the ribs approximate to the haunch, the animal is said to be "well ribbed up". A long, weak loin, by separating these parts, increases the width of the flanks and gives the



BACK HOLLOW FROM AGE



BACK NATURALLY HOLLOW

appearance of slackness, hence the common expression, "slack in the loin". Horses so constructed are said to "want a rib".

DIRECTION OF THE BACK AND LOINS

The line described by these regions will be found to vary to a considerable extent in different individuals. In some it is straight, in others more or less curved in an upward or downward direction.

A straight back is the one universally recognized by judges as combining the greatest measure of power with the most perfect freedom and scope of action.

An upward curve of the back is described as a *roach back* (Plate VIII). Most writers appear to agree that this condition is specially adapted to the purpose of bearing weight, but it presents several important disadvantages. In animals so constructed the back is shortened by the upward curvature, and the great spinal muscles are said to be wanting in development—two conditions distinctly opposed to great range and rapidity of movement. Captain Hayes points out that as a rule in these cases the "chest is flat-sided", but Goubaux and Barrier affirm that it is "incorrect to associate this condition with flat ribs and a narrow chest". Between the two statements there is a medium which best accords with the experience of the writer, and it may be expressed by saying that sometimes roach-backed horses are flat-sided.

In both light and heavy draught-horses this defect is sometimes acquired by being forced into heavy and prolonged work at an early period of life, while the bones and ligaments of the spine are imperfectly developed. Horses thus deformed are said to be "pulled out of shape". Whether congenital or acquired, however, this arching of the back is seldom found to interfere with the services of the shaft-horse whose work does not call for rapid locomotion. It is an eyesore, and as such materially depreciates the value of the animal in which it occurs.

The back is *hollow* or *saddle-backed* when it describes a downward curve (Plate VI). Here the bones of the spine are depressed, either as the consequence of some disturbance in the course of development, or from relaxation of the ligaments by which they are united and supported. In this type of horse the vertebræ lack firmness of union, the back as a whole is wanting in rigidity and power of resistance, with the result that the weight, instead of being borne by the bones, is in too great part supported by the connecting ligaments, which, when overburdened, yield, and by so doing add to the existing defect. Not only is the superimposed weight badly sustained, but, owing to want of solidity in the spine, the

force of the impulses transmitted to it in progression by the hind extremities is greatly diminished. It is for these reasons that *sway-backed* animals lack the power and pace of others more perfectly constructed.

This condition, like the *roach-back*, may result when horses are subjected to hard work and heavy burdens during their colthood. It is also developed in very old animals, whose back muscles, becoming wasted and weak, fail in their support of the spine and the weight imposed upon it.

In considering this defect it must not be overlooked that hollowness of the back is in many cases more apparent than real. Horses with lofty carriage, prominent withers, and high croup often give the appearance of hollowness, although the back may be anatomically and physiologically perfect, and a similar false appearance will result if the spines surmounting the vertebræ in this region are exceptionally short and the muscles slightly developed.

In any case hollowness of the back, whether real or only apparent, is an eyesore. In the former case it is a serious defect as well, insomuch as it diminishes the capacity to race, or jump, or carry weight. Horses thus formed are more especially adapted for harness purposes.

THE CROUP

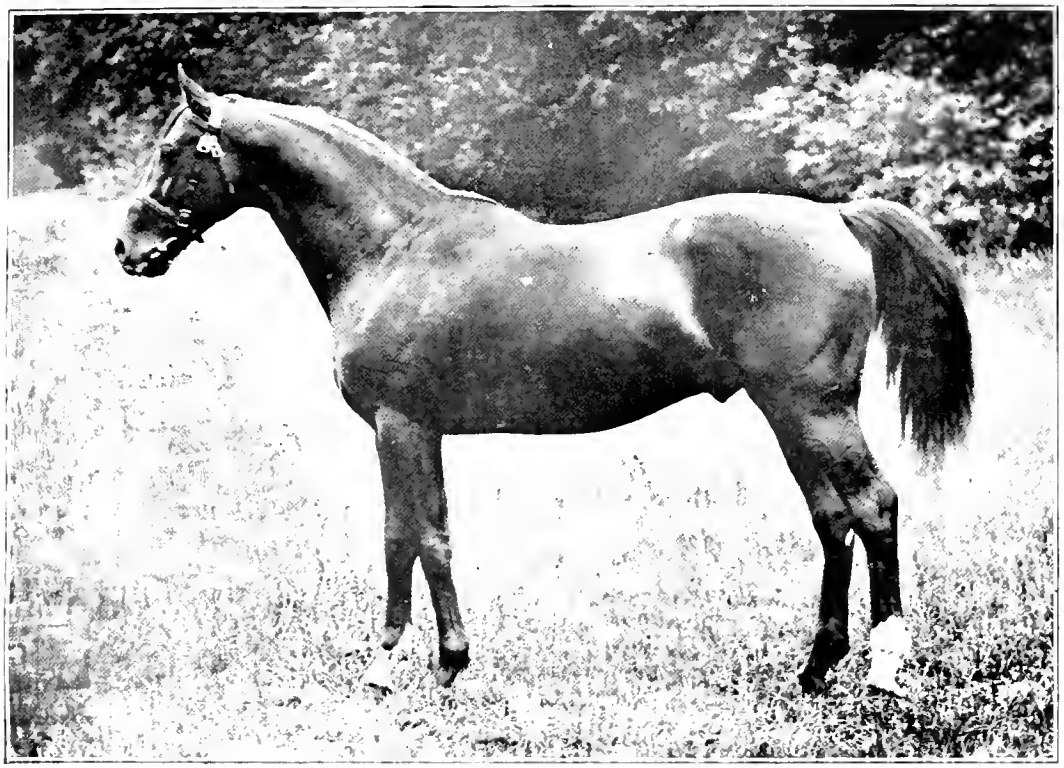
The croup comprises that part of the body situated between the loins and the setting on of the tail. It extends on each side as far as the upper part of the thighs and buttocks. The pelvis, which together with the sacrum forms the bony base of this region, although entering into the formation of the trunk, must nevertheless be regarded as parts of the hind extremities corresponding with the scapulæ or shoulder-blades of the fore-limbs.

The coxæ or uppermost bones of the posterior limbs are united together below, and joined to the sacrum or terminal portion of the spine above. By this arrangement a firm and compact union is effected between the leg and the trunk, so that the impulses from behind may be imparted to the entire body, through the articulation of the femur or thigh-bone with the pelvis.

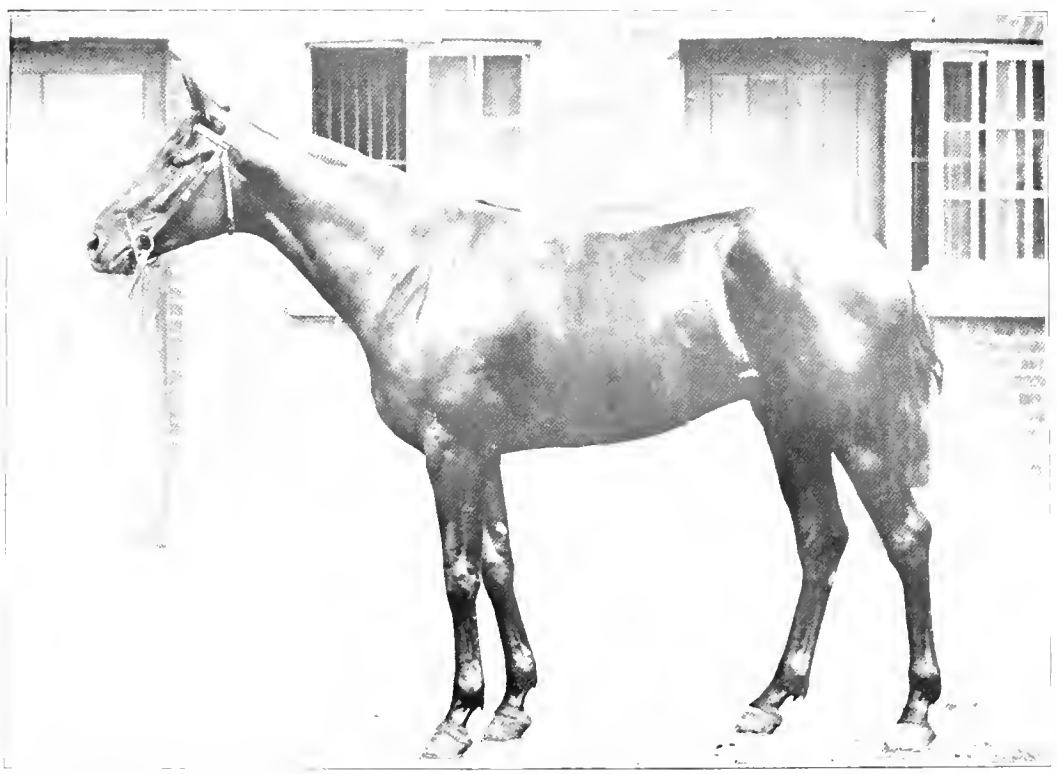
To the horse as a living motor the construction and development of this region is of supreme importance.

In galloping, jumping, rearing, as well as in draught, those vigorous efforts which enter into the highest expression of speed and power are mainly produced by the action of the muscles of the croup on the upper and lower thigh. How far that action may be effective in the one case or the other will depend upon the mechanical arrangement of the parts.

Length and width are qualities to which the croup owes its chief beauty



STRAIGHT CROUP



SLOPING CROUP

and power. All horses, whatever their type and purpose, should possess these attributes in a high degree, and of course in proportions best adapted to the particular services required of them. In the race-horse an extended croup is of the first importance to the development of a high rate of speed. The muscles are then long, and their range of contraction and power over the bony levers on which they act is correspondingly great. In the heavy draught-horse great length is not an essential quality, but, other things being equal, an extended croup is a feature much to be desired, since it not only adds to the beauty of the animal as a whole, but materially increases the liberty and scope of action of the hind-limbs.

Just as length is identified with speed, so is width related to power; hence it becomes of the first importance that in horses designed for heavy work the pelvis should be broad, thus affording ample space for the attachment of large, powerful muscles.

Here it should be pointed out that the full width of the coxæ or pelvis is not always accurately expressed in the transverse diameter of the croup, inasmuch as any marked downward slope or lateral inclination of the former will tend to reduce the width of the latter; but since in these circumstances the width of the bones remains the same and the muscles are undiminished in volume, it is not of material importance to the horse as a living motor.

As we have already observed, ample width is essential in all classes of horses, but in the lighter breeds excess in this direction becomes a fault, more or less serious in proportion as it is great. A croup too wide imparts to the action behind a heavy, rolling character; the movements of the limbs are thus made to dwell, and progression is impaired.

In the slow-moving draught-horse this is of no importance, but in those employed for riding and driving purposes it is a serious defect. A narrow croup, although less objectionable in the latter than the former, is in both a sign of weakness.

Besides length and width, the direction of the croup also exercises considerable influence in determining the aptitude of the horse for particular service.

The highest point of this region occurs immediately behind the loins where the internal angles of the ilia or haunch-bones are firmly united with the sacrum or terminal portion of the spine. Thence it proceeds more or less obliquely in a backward and downward course. Everyone recognizes the great variation existing in the degree of inclination of this region, but few appreciate the nature of its influence on the peculiar mechanical endowments of the animal.

The slope of the croup is in one way or another governed by the slope

of the pelvis, which forms its bony base; and although it is impossible to define the precise measure of power or speed which may be evolved under different degrees of inclination, it is fully recognized that while the former of these two forces is favoured by great obliquity, the latter is best developed by a direction approaching the horizontal.

When the conformation of this region is marked by great obliquity the horse is designed to "employ great force at a slow pace, while with the croup disposed horizontally he is capable of developing great speed, but fails when called upon to carry weight or cover a long course. For light carriage work such a conformation may suffice, but it is not adapted for heavy draught.

"Between these two extremes there are numerous intermediary types which may with sufficient ease be grouped into three categories as follows:—

"1. Saddle-horses which are obliged to move a more or less heavy weight carried on their back, at a sufficiently great velocity, whether at the trot or the gallop. Those which are destined for the turf should have a croup approaching the horizontal ideal of 25 degrees, but with a more oblique ilium (30 degrees) for the purpose of giving solidity to the structures anterior to it. Trotters are benefited by a somewhat more oblique direction of the ilium (35 degrees). As to hunters and cavalry horses, used exclusively under the saddle, and from which great strength of the loins and posterior quarters but less speed are demanded, their croup should have an intermediary position between the oblique croup of the draught-horse and the horizontal one of the thoroughbred. . . .

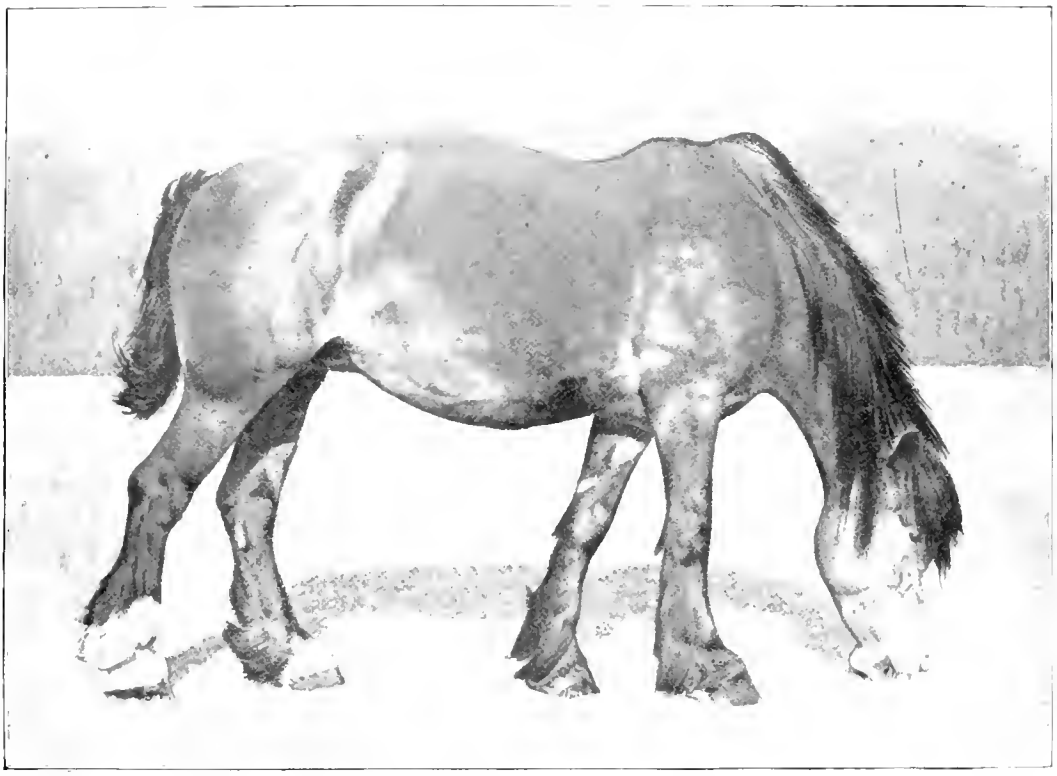
"2. Driving-horses employed on the track or as animals of luxury, whose exclusive gait is the trot without any weight on the back, can without disadvantage have a horizontal croup.

"This is appreciated as a quality of beauty and fashion as well as for its mechanical advantages in rapid locomotion.

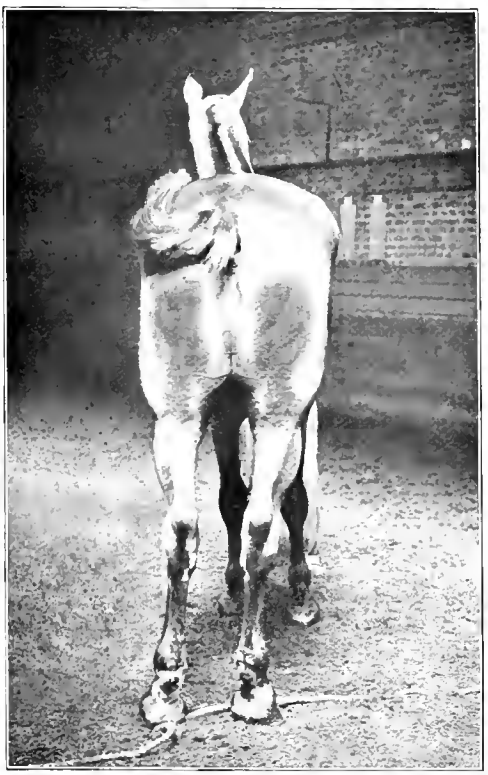
"3. In draught-horses for fast, heavy work or mixed motors, combining at the same time force from their bulk and their muscular power and a certain speed from their relative muscular activity . . . a croup slightly more inclined than that of the cavalry horse or the trotting horse will fulfil the required conditions" (Goubaux and Barrier).

Excessive inclination or backward slope of the croup constitutes the unsightly condition known as "goose-rump". Such a conformation, although not inconsistent with ordinary work, is incapable of great speed.

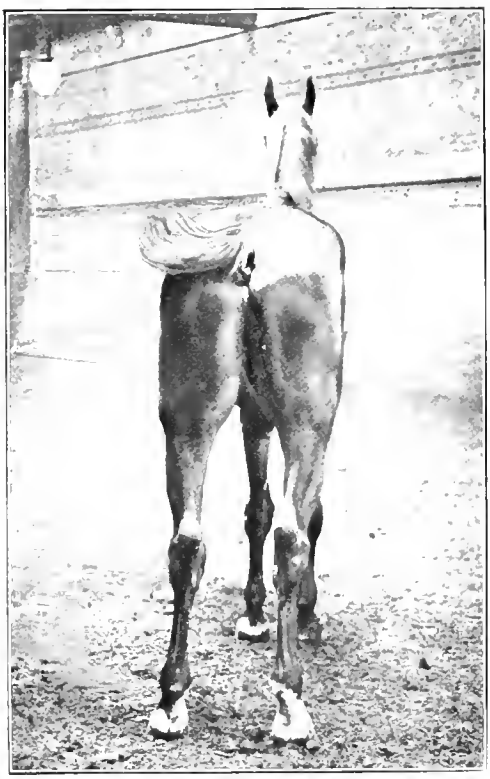
In the heavy horse it is the least objectionable, for although by such construction the force of impulsion is transmitted too much in the vertical direction to yield its fullest effects, the powers of draught may still be very considerable.



ROACH BACK



GOOD QUARTERS



SPLIT-UP

THE BREAST

The dimensions of this region are more especially interesting on account of its width, which by many is regarded as an indication of the size and capacity of the chest. This, however, both observation and dissection have proved not to be the case. The distance between the two first ribs varies but little in animals of the same variety and size, although the actual width

Fig. 47.—Narrow Breast

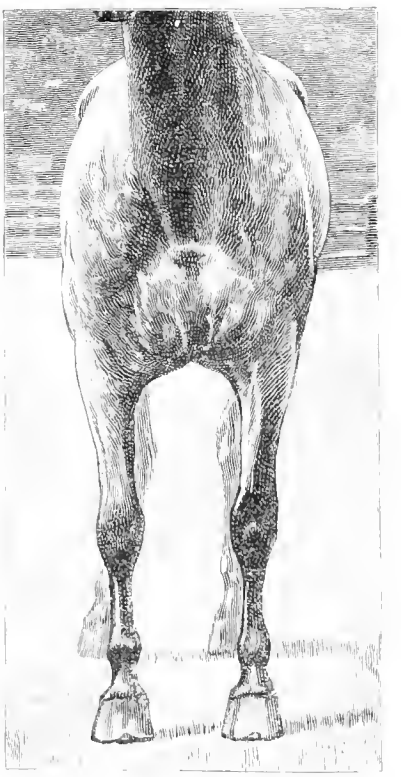


Fig. 48.—Broad Breast

of the breast may present very considerable differences in the same specimens. The cause of this discrepancy will be found in the varying size of the muscles, especially those which unite the fore extremity to the sternum or breast-bone. When these are largely developed the pectoral region is full, deep, and broad, and still more so if associated with general obesity. When from any cause such an animal is made to waste as a consequence of disease or indifferent food, a difference in the transverse diameter soon becomes apparent. It is not, however, to be understood that the size of these muscles, and therefore the width of the breast, bears no relation to the respiratory capacity, for "dense and vigorous muscles require a spacious

thorax, whence it follows that the width of the pectoral region, owing to the volume of its muscles, should coincide with a certain degree of respiratory power. If therefore this region is narrow it becomes desirable to determine to what cause this narrowness is due, whether to that of the thorax directly or to the animal's condition." (Goubaux and Barrier.)

The same eminent authorities observe that horses endowed with speed should be well open in front. A very narrow breast is always to be regarded as a defect of conformation. It indicates, they say, a "feeble development of the muscular system, and very often respiratory organs of small amplitude". Captain Hayes, however, is of opinion that a race-horse cannot be too narrow in front, but he insists that his fore-legs shall be "properly shaped and properly put on, and that the action in front shall be true", which may be taken to mean that he shall possess a fair amount of breast-room.

No great benefit could result to the function of respiration by the front ribs being placed wide apart; too great width at this point, whether from the size of the muscles or from the space between the ribs, would be a distinct mechanical disadvantage to horses of speed, for by separating the fore-limbs it would unduly enlarge the base of support, and by displacing the centre of gravity from side to side the forward impulses would be weakened and the velocity diminished.

In heavy horses a deep, wide, muscular breast is a point of superior excellence because it adds to the bulk and increases the power of draught, in which slow but energetic movements are most essential.

CHEST AND ABDOMEN

Although having comparatively little concern directly with the mechanism of locomotion, the chest and abdomen require the fullest consideration, not only in relation with the extremities by which they are supported, but also in regard to the organs they enclose. In the chest are contained the central organs of circulation and respiration, heart and lungs; while the abdomen gives lodgment to the more voluminous apparatus devoted to the digestion and assimilation of the food. It may be said, therefore, that these two regions which mainly compose the trunk are specially related with those organs to whose physiological activity the body owes its energy, whether expressed in the terms of "speed" or "force". It will be manifest from this that whatever may be the type of horse, whether constructed for pace or power, the highest development attainable in these parts should be sought for. As Goubaux and Barrier observe, "The body containing the organs which are most

essential to life . . . cannot be defective from excess of development. If disproportion seems to exist in the trunk compared to the limbs, then the latter are not properly constructed to support the former. But generally, although excess may not be objectionable, the same cannot be said of deficiency of development.

"Our machine, having a weak chest and small abdomen, will be without energy, without wind, and capable of very little exertion. Such an animal will be a poor feeder and will not last long."

With reference to the general dimensions of the trunk, it need only be said here that ample depth and width throughout are of the first importance to continued soundness and endurance. Undue length becomes a defect in so far as it can only be acquired by such an increase in the length of the back as to place the muscles of the latter at a distinct mechanical disadvantage in raising the forehand. Moreover, as pointed out by Captain Hayes, "The longer it is, the further removed will the fore- and hind-limbs be from each other, and the less able will the animal be to carry weight", or to move it. It is a point of conformation equally objectionable in the heavier and in the lighter types of horses, since the solidity and strength of the back, so necessary in draught, is diminished by undue length, and the action of the hind-limbs is transmitted with less force along the spine.

THE CHEST

The cavity termed the thorax or chest has for its bony base the dorsal vertebræ above, the sternum or breast-bone below, and the ribs on either side. The spaces between the latter are filled in by the intercostal muscles. In front it is limited by the neck, and behind by the diaphragm—a broad, flat muscle which intervenes between it and the abdominal cavity.

The size and mobility of the chest walls, and consequently the volume and breathing capacity of the lungs, are mainly due to the length and disposition of the ribs, especially those situated behind the shoulder, where, unlike those in front, the lower extremities have no fixed attachment to the sternum below, and are greatly increased in length by the addition of tapering rods of elastic cartilage (fig. 49). The movements of the ribs in ordinary breathing tend to increase the size of the chest during inspiration and to diminish it during expiration, but the manner in which these changes are effected is not, as commonly supposed by some people, by the rising and falling of the ribs at right angles with the long axis of the body. It is found, on the contrary, that when the chest expands

it does so by the ribs being drawn forward and outward, while at the same time the intercostal spaces are enlarged by the separation of the ribs one from the other. In contraction of the chest during expiration these movements are reversed, the intercostal spaces becoming narrower and the ribs being brought nearer together.

The extent to which the chest is capable of enlarging is much greater behind, where the ribs are long and loosely connected below, than in front, where they are shorter and more closely though movably united to the breast-bone as well as to the spine above. From these considerations it will be seen that the power of expansion possessed by the thorax is for the most part due to the length and curvature of the posterior ribs, and it is for this reason that ample scope is so much desired in this region.

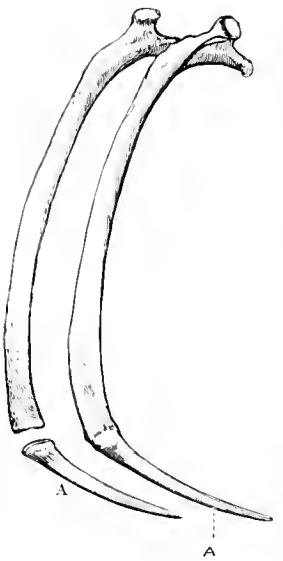


Fig. 49.—Two Ribs, showing at A A the Costal Cartilages

The points of special interest as affecting the conformation of the chest are its dimensions in respect to height, width, and length.

Height.—The vertical diameter of the chest is spoken of by hippotomists as its height. This dimension, although regulated by the length of the ribs, is not necessarily in exact conformity with it, but will be greater or less for ribs of given length according to their degree of curvature. The greater the curve described by the ribs the less will be the distance between their two extremities, and consequently the less will be the vertical diameter of the chest; but it should be noted that any diminution in the vertical distance resulting from their convexity will be added to the transverse diameter, and thus what is lost in height is gained in width. Ribs of moderate length, but wanting in curvature, may give a fairly deep chest, but the sides will be flat and the capacity of the thorax small in consequence. As Cline has observed, the more the chest departs from a cylindrical form the less becomes its capacity. Ample depth in this region is commonly denoted by the position of the sternum, which should come well down below the point of the elbow. This, however, is not always a reliable indication, as the position of the chest between the fore extremities may be set higher or lower by the muscles which suspend it, just as the height of the withers, as we have seen elsewhere, may be influenced by the same cause.

From what has been said it will be seen that it is of the first importance to the beauty and utility of our subject that the ribs should

be long, not only that the chest may be deep, but, more important still, that it may be well arched. Besides this they must be well inclined backward towards the haunch, to which the posterior or "back" ribs should nearly approximate. It is equally important that they should be placed wide apart and united by broad intercostal muscles. So constructed, the ribs will have plenty of play in their outward and forward movements, and the capacity of the chest will be correspondingly large. Any shortcoming in these respects imparts to the body an appearance of lightness, legginess, and instability. The animal will be, in stable parlance, "slack in the loin", badly "ribbed up", and wanting in power and endurance.

M. Gayot observes that the distance between the summit of the withers and the sternum in a well-formed chest should be greater than that between the sternum and the ground. Referring to this point, Captain Hayes, in his work on *The Points of the Horse*, contrasts the measurements of the race-horse with those of the draught-horse, selecting Ormonde and St. Simon as examples of the one, and the shire horse Cheadle Jumbo and shire mare Chance as examples of the other. The results of his measurements are given in the following table:—

	Ormonde.	St. Simon.	Cheadle Jumbo.	Chance.
Depth from withers to brisket.....	29 ins.	$27\frac{1}{4}$ ins.	35 ins.	34 ins.
Distance of girth place from ground.....	$35\frac{1}{2}$ ins.	$36\frac{1}{4}$ ins.	$31\frac{1}{2}$ ins.	33 ins.

The measurements of Ormonde were taken in July, 1887, when he was a four-year-old, and those of St. Simon in September, 1884, when he was a three-year-old, and presumably both horses would be in racing condition. It is not, however, stated at what age or in what condition the shire horses were when their measurements were taken, and as this would materially affect the comparison, it is impossible, in the absence of exact data, to estimate the value and accuracy of the conclusions at which Captain Hayes has arrived. Both Cheadle Jumbo and Chance were show animals, and if the measurements were taken while in the usual show condition, no reliable conclusion could be drawn as to the relative dimensions of the chest and limbs by comparison with horses in racing form. In referring generally to the depth of chest as compared with length of limb in different types of horses, Captain Hayes points out that "if we take Ormonde as the highest type of the race-horse we

shall find that the distance from the top of his withers to his brisket, if applied down his fore-leg, will reach from his brisket only to the bottom of his fetlock. In the high-class Leicestershire hunter it will come down to the middle of the pastern, in the heavy-weight hunter to the coronet; in the artillery 'wheeler', or light cart-horse, to the ground; and in a Cheadle Jumbo it will be four inches more in length."

Width.—In the exercise of our judgment on this point it is necessary to view the chest first from the front, whence the extent to which the ribs project beyond the line of the shoulder will be noticed, and then by standing first to the right and then to the left, before and behind respectively, a more complete inspection may be made of its general contour. The greatest width of this region will be found at a point corresponding to about the eleventh rib. It is, however, to be understood that in estimating the transverse diameter of the chest some consideration must be given to the condition of the horse as to his state of obesity and muscular development.

Very fat animals may display ample width and roundness for the time being, only, however, to subside to the meanest proportions after a brief period of ordinary work, or a change from sloppy food to hard corn. Conversely, the standard of measurement presented by horses, and especially young ones, when ill-done and emaciated, may lead to an under-estimate of what the transverse measurement of the thorax may be when they are in fair condition. To be able to appreciate these discrepancies and to form a sound judgment of the actual dimensions of this region is a qualification only to be acquired by long practice and close observation.

LEGS

The legs are supports situated right and left of the anterior and posterior extremity of the body respectively, hence they are distinguished as front- and hind-limbs. They each comprise a column of bones articulated together at irregular intervals, forming large, free-moving joints, and besides supporting the trunk serve for the attachment of muscles through whose agency the body is moved from place to place. The muscular apparatus by which this is effected is confined to the upper portion of the limbs, and by means of long tendons (fig. 12, p. 20) acts upon and directs the movements of the bony segments below. By this disposition of parts the lower portion of the leg is rendered light, and enjoys as the result a freedom and liberty which could not otherwise have been the case. The weight of muscles attached to the lower extremity of

GOOD FORE-LEGS

WEAK FORE-LEGS

a long lever, such as the leg represents, would not only render the steps heavy and the movements awkward, but it would also lower the centre of gravity and seriously interfere with progression. Moreover, the grace and elegance of form and action which the horse now possesses could not in such circumstances exist.

Function of the Limbs.—Although the action of the fore and hind extremities have much in common, their functions are in some respects widely different. This might be inferred from the manner of their attachment to the trunk, the fore part of which is supported, as in a sling, by muscles which connect it to the fore extremities. By reference to fig. 44, p. 50, it will be seen that there is no joint or solid union between the fore-limbs and the chest such as is found between the hind extremities and the pelvis. In the former case the scapula or blade-bone moves freely over the surface of the ribs with which it is in loose contact, while in the latter the head of the thigh-bone (fig. 50) is confined by strong ligaments within the cup-like cavity of the pelvis, with which it forms the hip-joint, through which the hind-limbs transmit their propulsive efforts and effect the forward movement of the body.

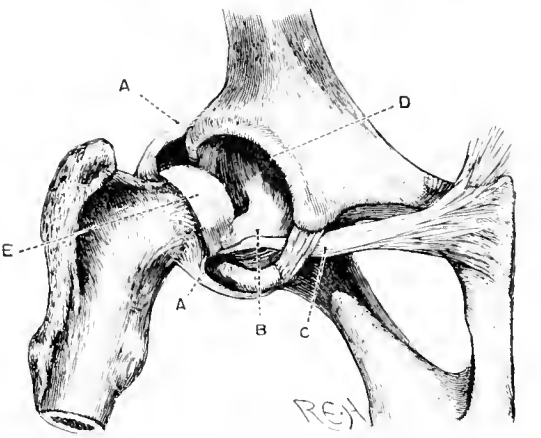


Fig. 50.—Articulation of the Hip Joint

A A, Capsular or enclosing ligament. B, Round ligament. C, Pubio-femoral ligament D, Cotyloid ligament. E, Head of femur.

It will be noticed later that the weight borne by the front limbs exceeds that sustained by the hind ones, and in addition to this they have also to receive and disperse the forcible impact from behind which is imposed upon them in racing and jumping, and in a less degree in the slower paces. Their ability to meet these requirements is explained by the peculiar manner of their attachment to the trunk. This, as we have seen, is effected by muscles only, which permit the weight and propulsive force to fall upon the passive organs of locomotion —bones, tendons, and ligaments—without exciting that violent reaction which would necessarily result had the scapula a fixed articulation with the trunk, such as exists between the pelvis and the thigh-bone.

It will be seen, therefore, that besides being organs of support, the fore-limbs are specially designed to break and disperse the concussion to which they are exposed in the more energetic movements of the body.

As organs of propulsion they exercise but slight influence as compared with the hind-limbs. Their greatest efforts in this connection are developed in heavy draught (fig. 51), when "the body strongly inclined forward gives the fore-legs an oblique direction backward, which permits them to push against the collar to which the shoulders are energetically applied. It is by the extension or opening out of all the articular angles previously semi-flexed that the fore-limbs are able to accomplish this result. When they are directed obliquely and in an inverse direction, as is seen sometimes at the beginning of the effort of traction, the force which they exercise upon the trunk, and therefore against the collar, is at its minimum. Traction forward can be favourably executed only when the foot directed backward is fixed against the roughness of the ground. This is observed in the draught-horse as he moves his load; when the soil, the point of support, gives way, the feet suddenly glide backward." (Goubaux and Barrier.)

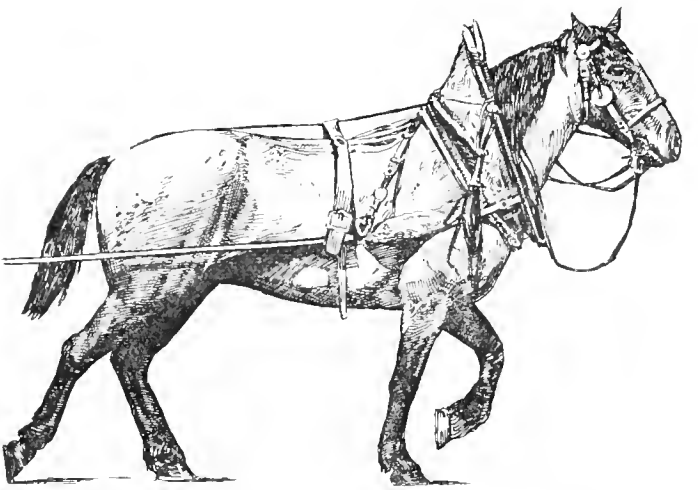


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Fig. 51.—Oblique Position of the Limbs in drawing a Load

THE SHOULDER

Of all the parts of a horse none perhaps come in for so much criticism as the shoulder, and having regard to the influence it is capable of exercising over the various phases of locomotion, and in safeguarding the integrity of the limbs with which it is connected, no wonder can be entertained that it should be made so much a matter of concern to the breeder, the dealer, and the user of horses.

In this, as in most other regions, no single design can be made to meet all purposes, and between the two extremes of conformation which lend themselves respectively to speed and power some variation will necessarily be found to exist. The measure of mechanical perfection either in regard to the one requirement or the other being incapable of accomplishment, it must suffice to indicate the more salient features identified with each.

In estimating the form and character of this region due consideration will require to be given to the general condition of the animal, which may very materially modify, if it does not altogether obliterate, the finer features of the part. This is very much the case in young highly-fed horses, and especially stallions and brood mares, in what is termed "show condition", whose tissues, loaded with fat, almost completely efface the outline and bony landmarks of the shoulder. To the real judge of horse form this is not of serious importance, for, recognizing the difficulty, he will endeavour to determine the extent of its boundaries by close observation of its movements and their relation to neighbouring parts, as the withers, the neck, the back, and the chest. In the reverse condition, whether the spareness be the result of poverty or work, every part of the region becomes clearly defined, so that its general form, extent, and direction may be fully made out.

One of the first essentials in the make-up of a horse is ample length of the shoulder, in which a long blade-bone provides accommodation and attachment for muscles of proportionate size. The greater the length of the latter the more they will be able to shorten during contraction, and the greater will be the range of movement they will effect in the act of progression. A long shoulder is much to be desired in horses of speed, and most of all in the thoroughbred. Without it the limbs do not develop that sweeping stride which distinguishes the race-horse and the trotter. On the contrary, the action is short, cramped, wanting in elastic reaction, and conducive to concussion and wear of the limbs.

Necessary as length is to the velocity of the gait, it is only when supplemented by obliquity (Plate X, fig. 2) that the shoulder can fully profit by it. In all horses of whatever variety, from the heavy draught-horse to the boys' pony, ample inclination of the blade-bone is of primary importance. High, sloping withers and a deep chest usually coexist with a long, well-inclined shoulder.

In this condition the shoulder muscles are enabled to enhance greatly the forward movement of the arm-bone, and to favour the elevation and extension of the entire limb.

But there are other advantages of equal importance arising out of sloping shoulders—they impart liberty and elasticity to the gait, lighten the tread, and save the limbs from the injurious effects of concussion and wear.

With length and obliquity the shoulder should combine a well-developed symmetrical set of muscles, in volume and strength adapted to the special services of the animal. In the race-horse, whose purpose

is speed, any undue thickness in this situation will seriously detract from the lightness of the forehand and prove an obstacle to both velocity and endurance, besides adding materially to the wear and tear of the limbs.

In a less degree the same remarks will apply to the hack and the light harness-horse, in whom thick, fleshy shoulders are not only an eyesore, but greatly detract from the liberty and harmony of the gait by overburdening the forehand.

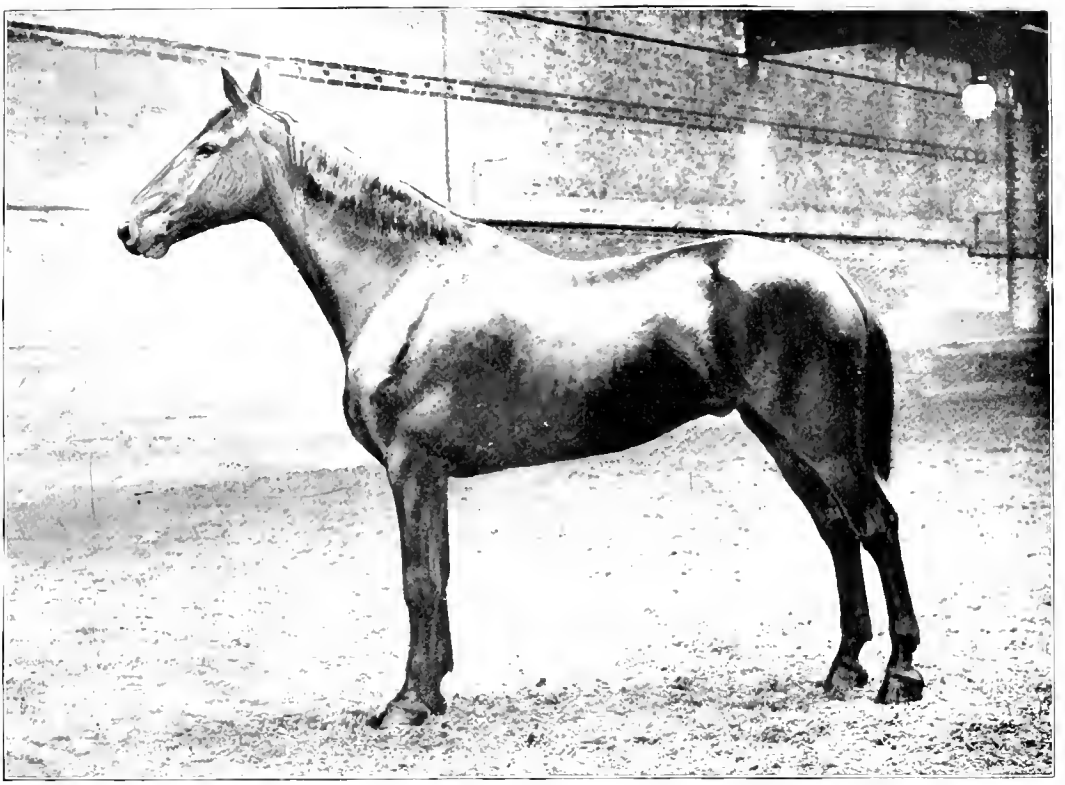
This condition is often aggravated by the coexistence of coarse withers and a neck surcharged with muscle.

In the hunter and chaser, Captain Hayes observes, the "shoulder-blades should be long and oblique, so as to enable him in the best possible manner to resist the shock of landing over a fence. On account of having this special kind of work to do, his shoulders should be more muscular than those of the race-horse. The fact of his shoulders being sloping will enable him to 'take off' more cleverly at any obstacle than he could do were they upright."

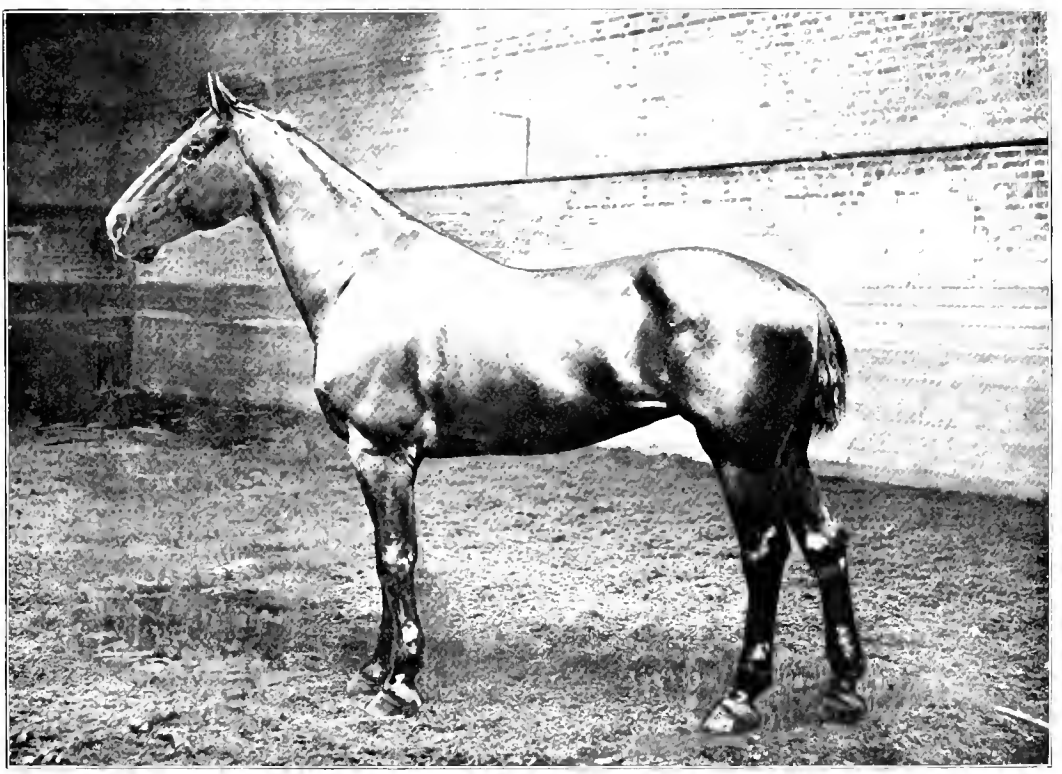
In the draught-horse, in whom range and rapidity of movement is subordinate to power, great length and obliquity of the shoulders are not of paramount importance, but, other things being equal, they at no time constitute a serious defect of construction. Ample length, besides affording space for the bearing of the collar, is usually in conformity with a deep, wide chest, while shoulders well inclined increase the length, elasticity, and quickness of the step without materially detracting from muscular power. By many an oblique shoulder is regarded as an obstacle to draught. It is said that with such a conformation the horse is incapable of throwing all his weight into the collar. Since, however, "horses cannot be made to fit the harness, it would surely require but little ingenuity to make the harness fit the horse; if at the same time due regard was paid to the line of traction, and the traces attached accordingly, whatever ground of objection to sloping shoulders in the draught-horse may be, would disappear".

It should be observed that in some of the finest specimens of the "Shire" and "Clydesdale" a sloping shoulder is one of the leading features of their make-up, and the grand stride, limpness, and elastic recoil of the limbs in such animals present a striking contrast to the short, stilty wobble of those otherwise constructed.

It only remains to notice that as mass is related to power, as length is to speed, the shoulder muscles of the heavy draught-horse should be as large as possible, so that energy and weight together may operate in the collar.



LONG SLOPING SHOULDER



STRAIGHT SHOULDER

THE ARM

The arm is intimately connected with the lateral aspect of the chest, and, like the shoulder-blade with which it articulates above, is completely invested by muscles. The two regions being outwardly undistinguishable one from the other, some hippotomists have treated them together as jointly forming the shoulder, and large numbers of practical horsemen do not differentiate between them.

The bony base of the upper arm is supplied by the humerus, a somewhat massive bone whose superior extremity articulates with the scapula to form the shoulder-joint, from which it proceeds obliquely backward, and with the radius and ulna combines to form the elbow-joint.

The range of movement of the upper arm and the forward swing of the entire limb will very much depend upon its length, which should be as great as possible so long as it is not out of proportion with the shoulder.

Any discrepancy in this respect gives rise to relatively short shoulder muscles, whose limited contraction would restrict the movements of the arm both in extent and freedom.

When the arm is unduly long the shoulder muscles are overtaxed, and the forward movement of the limb is diminished.

There is besides this a lack of liberty in the action of animals so constructed, and a disposition to stumble and to fall. When too short the forearm is not sufficiently advanced, as a result of which the step is shortened and speed is diminished.

"On general principles the shoulder and the arm should be long absolutely, in order to be favourable to velocity; but with the same total length of these two segments, it is necessary that the former should be long and the latter short."—Goubaux and Barrier.

The force exercised by the fore-limb in the forward movement of the body being directed through the arm, some importance must attach to the degree of inclination which this region presents.

In this connection it is found that while great obliquity of the humerus detracts from a high rate of speed, in the heavy draught-horse such a condition becomes an advantage, since it gives to the muscles connected with it a more perpendicular insertion, whereby their power is increased.

It is hardly necessary to say that to a proper length and direction of the arm should be added a set of well-developed muscles.

ELBOW

The elbow is by no means the least important item in the make-up of the fore-limb, since it affords attachment to the largest and most powerful muscles of the fore extremity. Acting as a lever, the power of the muscles connected with it is augmented or diminished according as the lever arm is long or short. Besides being long the elbow should stand clear of the body, and be directed backward, or with the slightest outward inclination. When inclined too much in the latter direction the toes are made to turn inward, and the animal is said to be "pigeon-toed". When the elbow is directed towards the chest the feet are disposed outward.

In addition to being unsightly both these conditions predispose to accident and injury. Speedy cutting, interfering, and stumbling are common consequences of these defects of conformation, besides which they disorder and retard the action and produce a rolling and irregular gait.

FOREARM

Two bones (fig. 11, p. 19) enter into the formation of the forearm. The radius, the longer and larger of the two, is situated in front, and extends from the arm to the knee; the ulna, whose upper extremity forms the projecting point of the elbow, is situated behind, and unites with the radius by ossific union for about two-thirds of its length.

For the purpose of speed, the length of the step in progression, and consequently the velocity attainable, will be greatly influenced by the length of the forearm. From the point of view of speed, therefore, this region should be as long as possible.

Although favourable to great range of forward movement and a high rate of progression, a long radius does not admit of that sharp, high knee action so much admired in the park hack. This kind of movement is more likely to be developed when the forearm is short.

The muscles of this region both before and behind should be large and well set out, so that when viewed in profile the forearm presents ample width throughout its entire length; any undue and abrupt narrowing towards the knee not only disturbs the harmony of proportion, but is a sign of weakness, which will be still further emphasized in the tendons and parts below forming the region of the canon.

Viewed from before, the forearm should be thick in conformity with its width.

It is also important, in order that the body may be truly balanced, that it should be well directed. Any deviation from the vertical line in one way or another must be regarded as a serious defect of conformation, inasmuch as it alters the distribution of the body-weight, and in doing so not only tends to impair the natural action, but to relieve certain parts of the limb to the detriment of others.

Considered in relation to parts below the knee, the forearm should be long and the canon short in all fast motors such as racers and chasers.

The muscles of the former region, being coextensive with the bones, will in these circumstances enjoy a large range of contraction, and be able to move the shorter canon through a greater space and with greater rapidity, and thereby develop a higher speed.

KNEE

The knee as a factor in locomotion is of much importance in relation to conformation. It is a large and complex joint, made up of a number of bones united by many connecting ligaments, and so arranged as to allow a free and extensive range of hinge-like action between it and the arm. Although the degree of movement which it permits is very considerable, it can only take place in the directions of flexion and extension, *i.e.* bending the canon upon the forearm and projecting it forward. Important tendons, by whose agency these movements are effected, cross the anterior and posterior face of the joint respectively on their way to the bones below.

From every point of view the knee should present ample space, its surface should be regular, and its parts clean and well-defined. An aspect of roundness is objectionable, since it denotes a thick skin and a superabundance of connective tissue beneath it, as well as a low cast of breeding and a soft, lymphatic temperament.

Viewed in profile the joint should be wide from front to back, and the projecting angle seen at the outer and back part above should be large and prominent, so as to give room for the play of the tendons which it partly encloses, and to furnish ample space for the attachment of others to it which assist in flexing the knee.

Regarded from the front the joint should present a broad, flattened surface for the accommodation of the extensor tendons which pass over it.

The further advantages of a large knee will be to provide large articular surfaces and generally to increase the capacity for movement, and to break and disperse the effects of concussion. The direction of the knee should coincide with the vertical direction of the forearm and canon.

Deviations from this course of one kind or another are frequently

observed, and present some of the worst and most objectionable defects of conformation.

When the knee is displaced forward in advance of the vertical line it is said to be "bowed", or the horse "stands over", "knee sprung", &c. (fig. 52).

Fig. 52.—Bowed Knees

This deformity may exist at birth and continue through the life of the animal, when it is said to be "congenital", or, as more frequently occurs, it arises out of hard work, injury, and contraction of the weight-bearing structures of the limb, especially the back tendons and ligaments. Other examples result from an enfeebled state of the flexor and extensor muscles, whose tendons being relaxed fail to give support to the joint.

When of congenital origin "bowed knees" are not a serious defect except in bad cases, but when otherwise induced they impair the working powers of the animal and render him dangerous both in the shafts and under saddle.

When the knees incline backward (fig. 53) the horse is said to have "calf knees". This is a condition most frequently met with among heavy horses, but we are not aware of any serious defect arising out of it. It may, however, conduce to sprain of the back tendons and ligaments in horses of speed, as some writers have affirmed, by displacing the weight unduly backward.

Fig. 53.—Calf Knees

Lateral deviation of the knees may also occur in an inward or outward direction. In the former the joints approach each other more or less closely and the feet are turned outward (fig. 55). In the latter they are set wide apart while the feet are directed inward (fig. 56). These disturbances in the conformation of the limbs are not only unsightly but serious. Besides rendering the animal unsafe to ride or drive and awkward of gait they give rise to an unequal distribution of the body-weight on the supporting columns and conduce to

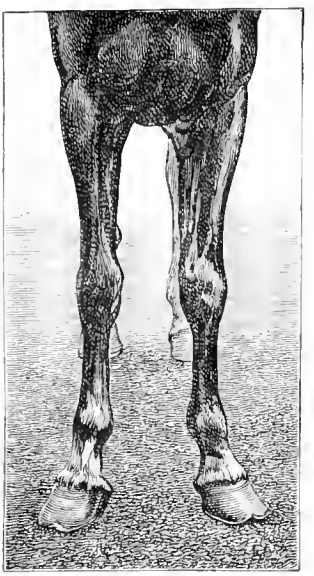


Fig. 54. Toes turned out

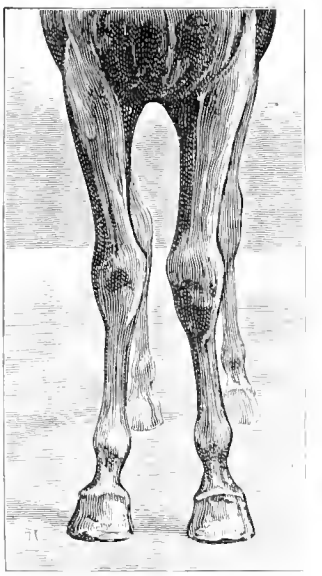


Fig. 55.—In-kneed

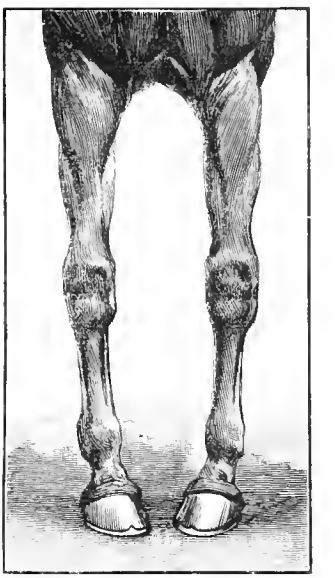


Fig. 56.—Toes turned in

sprain of the connecting and supporting ligaments of the joints and limbs.

THE CANON

This region is limited above by the knee in front and by the hock behind, and below by the fore and hind fetlock joints respectively. It embraces within its circumference the three metacarpal bones, in front of which are the extensor tendons, while behind, the suspensory ligament of the fetlock, the carpal or check-ligament, and the flexor tendons follow in the order named. The canon bone proper is the longer of the three. It occupies the central position and assists in forming the knee-joint above and the fetlock-joint below.

Immediately behind the large canon, lodged in a groove formed by the two small splint-bones, is the suspensory ligament of the fetlock-joint, a strong, flattened band of dense, tough, though elastic structure firmly attached above to the upper extremity of the canon and below to the small bones (sesamoid bones) behind the fetlock-joint, which it supports in opposition to the weight imposed upon them by the body.

Springing from behind the knee and hock, where it is firmly attached (fig. 12, p. 20), is a thick, short, tendinous cord, the check-ligament, a powerful band which, after passing a short distance down the leg, unites with the flexor tendon on its way to the foot.

By this arrangement the weight imposed upon the flexor muscle may

be transferred to the canon, thus enabling the former to rest and recuperate after exertion and fatigue. The posterior part of this region is formed by two tendons, the flexor pedis perforans and the flexor pedis perforatus. These two long, dense cords, after traversing the posterior part of the canon, are continued downward over the fetlock-joint, to which they give support, and finally become attached to the pedal or foot bone and the short pastern respectively.

The length of this region is greater behind than in front in all varieties of the horse, and, as might be expected, all things being equal, it is also slightly longer in the race-horse, the hunter, and other fast-moving types than in the heavy, slow-moving draught-horse.

Considered in relation to the arm in front and the second thigh or leg bone behind, the canon in the thoroughbred should be short, for as Goubaux and Barrier observe: "When it is thus the muscles experience less fatigue and contract to better advantage. A short canon is less heavy, oscillates more freely . . . and does not necessitate the same elevation of the limb above the ground to reach the limits of its movements."

Viewed in profile the canon should be straight and form a line perpendicular to the ground. Any marked deviation in this respect is prejudicial to the integrity and consequently to the work-bearing capacity of the legs. It tends to bring about an unequal distribution of weight on the underlying joints, and to impose undue strain on some of the connecting ligaments, which, sooner or later, results in active disease.

As the region of the canon is made up of weight-bearing structures, size and strength in its several parts are of the first importance to the resistance of wear and tear and prolonged endurance.

In every variety of the horse this part should present great width from front to back, with little or no variation from beneath the knee downward (fig. 57, and Plate IX, fig. 1) until approaching the fetlock-joint, where it will gradually widen out in conformity with a relatively large articulation.

This quality of amplitude is not only an evidence of power in itself, but also of a high state of development of those parts related to it—the knee-joint above, the fetlock below, the muscles of flexion and extension, and the tendons which proceed from them and concur in the formation of the canon.

Most horsemen know how important it is, and insist on substantial measurement below the knee. This is no doubt a good working rule, but it must be observed that lightness of the parts under consideration is not always to be regarded as an absolute defect of conformation, but

must be considered in relation to the services they have to perform. From this view-point it will be obvious that such a condition will be serious in proportion as the body is large and the weight to be borne is excessive.

A massive frame supported by small canons would impose undue strain on tendons and ligaments alike, and impart ruinous concussion to the joints.

Fig. 57.—Good Fore-arm and Canon

Congenital deficiency of development is sometimes observed in the flexor tendons and parts immediately below the knee (fig. 58), which, instead of being well set back from the bone, are here constricted and narrow. This "tying-in", as it is termed, of the tendons is a grave fault of conformation not only in itself, but also because it is invariably associated with a small knee. Captain Hayes is of opinion that this defect is "in almost all cases due to an admixture of more or less cart blood". Whether this be so or not we are not prepared to say, but we agree with him in the statement that animals so constructed are "unfit for fast work or for jumping".

Fig. 58.—Weak Fore-arm and Canon

Width from side to side, always greater in the fore- than in the hind-limb, is no less important than that from front to back. As this dimension is entirely made up of the bones, it affords a clear index not only of the strength of the bones themselves, but also of the width and the general scope of the knee- and fetlock-joint which they concur in forming.

Moreover, the greater the transverse diameter of the canon the larger and stronger will be the tendons and ligaments in relation to it.

Narrowness in this region is a mark of weakness, and mostly accompanies a slight development of the entire limb.

We have already pointed out that in horses of speed the canon should be absolutely long to give length and range to the stride. It should, however, be short in proportion to the forearm.

When weight is thrown upon the limbs the flexor tendons and the suspensory ligament should stand out in bold relief, the one behind the other, with a well-marked groove between them (fig. 57). A similar depression ought also to be seen immediately behind the canon-bone, between it and the suspensory ligament. To the touch these tendinous structures require to be hard, tense, and well developed.

In common-bred horses the outline of the parts composing this region is obscured by a thick skin and a superabundance of subcutaneous connective tissue. The legs are then said to be coarse and fleshy, and present a rounded, unshapely appearance.

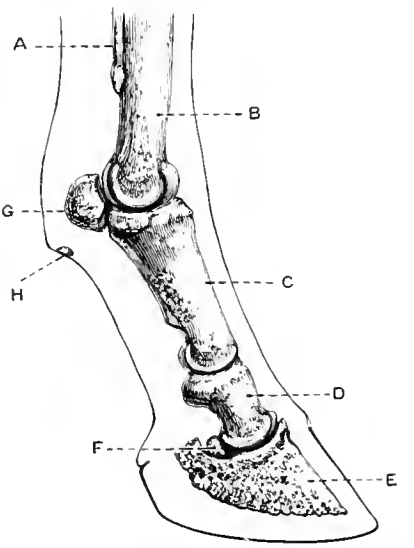


Fig. 59.—Bones of the Fetlock and Pastern

A, Splint-bone. B, Canon-bone. C, Suffraginis or first phalanx. D, Second phalanx. F, Pedal bone. F, Navicular bone. G, Sesamoid bone. H, Ergot.

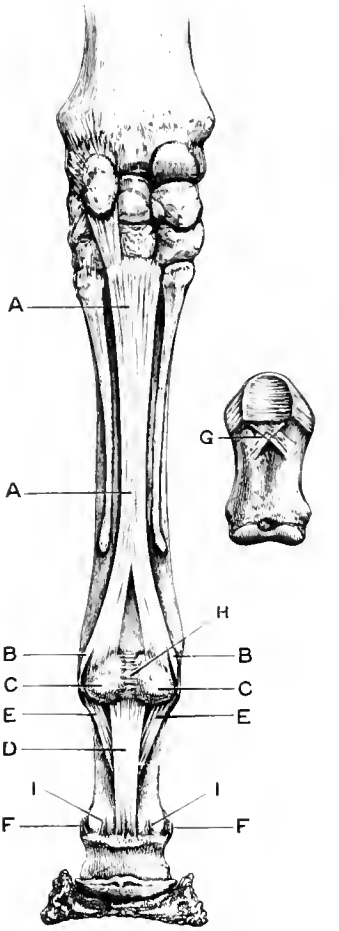


Fig. 60.—Attachment of the Sesamoid Bones to the Skeleton of the Leg

A A, Suspensory ligament. B, B, Outer and inner branches of the same. C, C, Outer and inner sesamoid bones. D, Superficial sesamoid ligament. E, Deep sesamoid ligament. F, F, Lateral phalangeal ligaments. G, Crucial sesamoid ligament. H, Intersesamoid ligament. I, I, Posterior phalangeal ligaments.

THE FETLOCK

The fetlock-joint, with its anatomical relations, constitutes an interesting and important piece of animal mechanism. The bones entering into its composition are shown in fig. 59, and consist of the inferior extremity of the canon, articulating below with the long pastern and behind with the two sesamoid bones, the four together combining to form a joint whose movements, although confined to flexion and extension, are in these directions of great range.

The sesamoid bones are connected with the back part of the knee by means of the suspensory ligament (fig. 60), a powerful elastic band by which the bones are supported in opposition to the downward and backward pressure imparted to them by the canon. While offering considerable resistance to the descent of the fetlock-joint, the elasticity of the suspensory ligament still permits it to yield more or less in accordance with the weight imposed upon it. The spring-like action thus imparted to the joint is still further amplified by the flexor tendons, which, in descending the leg, play over the sesamoid bones behind as does a rope over a pulley, and by limiting the descent of the fetlock thereby prevent any undue strain on the elasticity of the suspensory ligament.

It will be seen, therefore, that besides supporting weight, the construction of this joint is by its elastic mechanism specially adapted to the important purpose of warding off concussion.

To be in other respects efficient, the fetlock-joint should be broad from side to side and from front to back, thus providing for a large surface of articulation on the ends of the bones and greater leverage from the backward projection of the sesamoid bones, which unite to render the range of movement both free and extensive.

THE PASTERN

The pastern, which, as we have seen, assists to form the fetlock-joint, is situated between it and the coronet. The points of special interest attaching to this region are its length and its obliquity, in both of which excess or deficiency will constitute a defect of conformation proportionate to its extent.

The longer the pastern the more the reaction of the soil against the weight of the body augments and fatigues the muscles and taxes the tendons and ligaments which are connected with the sesamoid bones.

Deficiency of length of the pastern evidently has inverse drawbacks. The short-jointed horse surcharges his bones beyond measure. He lacks suppleness in consequence of the insufficiency of the fetlock as an apparatus

of dispersion, and has, from this fact, hard reactions; besides, he is more predisposed to osseous blemishes of the bones of the limbs, as ring-bones, &c.

The direction of the pastern is intimately allied to its length; that is to say, a long pastern (fig. 62) is in most cases too horizontal, while it becomes more vertical when it is too short. An exception is illustrated in fig. 63, where the pasterns are both short and sloping.

The close relationship which associates long-jointedness with low-jointedness is easy of comprehension, the pastern becoming less and less

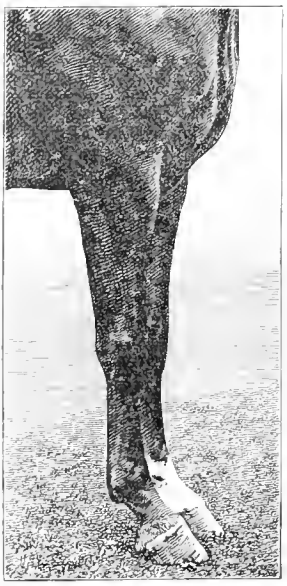


Fig. 61.—Good Pasterns

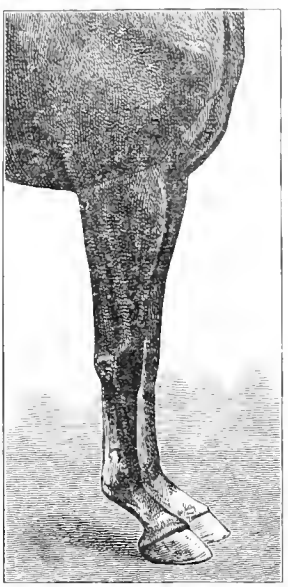


Fig. 62.—Long sloping Pasterns

Fig. 63.—Short sloping Pasterns

a column of support in the one, and more and more an elastic spring in the other in proportion as its length increases.

A spring gives all the more as it is more elastic and as the pressure which it supports is greater. This is precisely what takes place in a long-jointed pastern; which is at the same time nearly always low-jointed, because it is relatively weak and flexible under the weight and the reactions of the body.

The long and oblique pastern renders the horse more supple and more pleasant to ride; it enables him to disperse more easily the violent reaction of locomotion at great speed, and it would be very desirable in the saddle-horse, the driving-horse, and the race-horse were it not a source of danger to the integrity of the tendons.

"The short and straight pastern is strong; it has no very prejudicial influence against heavy-draught services, but it renders the reactions hard, and jeopardizes thereby the integrity of the osseous apparatus, hence it unfits a horse for fast riding."—Goubaux and Barrier.

UPRIGHT PASTERNS

GOOD QUARTERS AND GASKINS

It need hardly be said that to appropriate length and direction must be added ample width from front to back and from side to side, affording space for broad articulations and coextensive ligaments and tendons.

THE FOOT

Strength, beauty of proportion, energy and endurance, however well contained in the equine frame, are of little avail in the absence of a good foot.

To realize the highest services which these qualities are capable of developing requires the coexistence in this region of a high standard of excellence both in conformation and strength. It must be recognized that as the power of the motor becomes greater, so much more perfect and resisting should be the parts specially exposed to wear. It is too often the case with the uninitiated to lose sight of the foundation in presence of an attractive superstructure, a course which in the experience of the writer has cost many pangs of disappointment and regret to many self-constituted judges.

Size and Proportion.—This region is liable to considerable variation as a result of the operation of shoeing and other causes, so feet naturally ample in volume, and well conformed, may by unskilled treatment be rendered abnormally small and unshapely. This is a question which must always receive consideration in estimating the true character of this organ.

The relative size of the feet will first demand attention. Discrepancies in this respect are for the most part indicative of chronic disease, but now and again horses come into the world with one foot smaller than another. This irregularity of development is objectionable in so far that it indicates weakness, diminishes the base of support, and renders the foot liable to disease.

To differentiate between congenital and acquired disparity in the size of the feet sometimes requires an amount of technical knowledge which the amateur cannot be expected to possess; as, however, the former is of seldom occurrence, any departure from the standard of uniformity should at all times be regarded with the greatest suspicion.

Although ample size is a quality much to be desired in the feet of all horses, undue development in this direction is distinctly prejudicial to the well-being of the animal. Large feet call for large shoes, hence the limbs are encumbered with superfluous weight and the muscles are early fatigued; moreover, the action becomes heavy and unsteady, which sooner or later brings about brushing, stumbling, and premature decay of both legs and feet.

Less objectionable, but still to be condemned, are feet wanting in

volume. When unduly small they neither supply a good base of support nor take a sufficient grip of the ground. Many are structurally weak, and all fail to conserve the limbs for want of that breadth and substance necessary to diffuse and disperse the ruinous effects of concussion. The objection to small feet will be more serious in proportion as the action is high and the hoof is wanting in stoutness and strength.

Objectionable as are these conditions of excess and deficiency of development, there are defects of conformation still more inimical to work and wear which require to be noticed in dealing with this region.

Flat feet are among the worst of this group, for the reason that flatness is nearly always associated with weakness of the general structure of the organ. Besides being flat, the feet are usually on the large side. The heels are low, the frog full and fleshy, and the crust thin, loose in texture, and brittle. Feet of this character are commonly found in animals bred and reared on soft fen or marshland. They are liable to laminitis, bruising of the sole and frog, and especially predisposed to corns. The pasterns in horses of this class are wanting in substance and usually much inclined.

Fig. 64.—Flat Foot

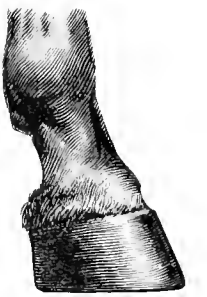
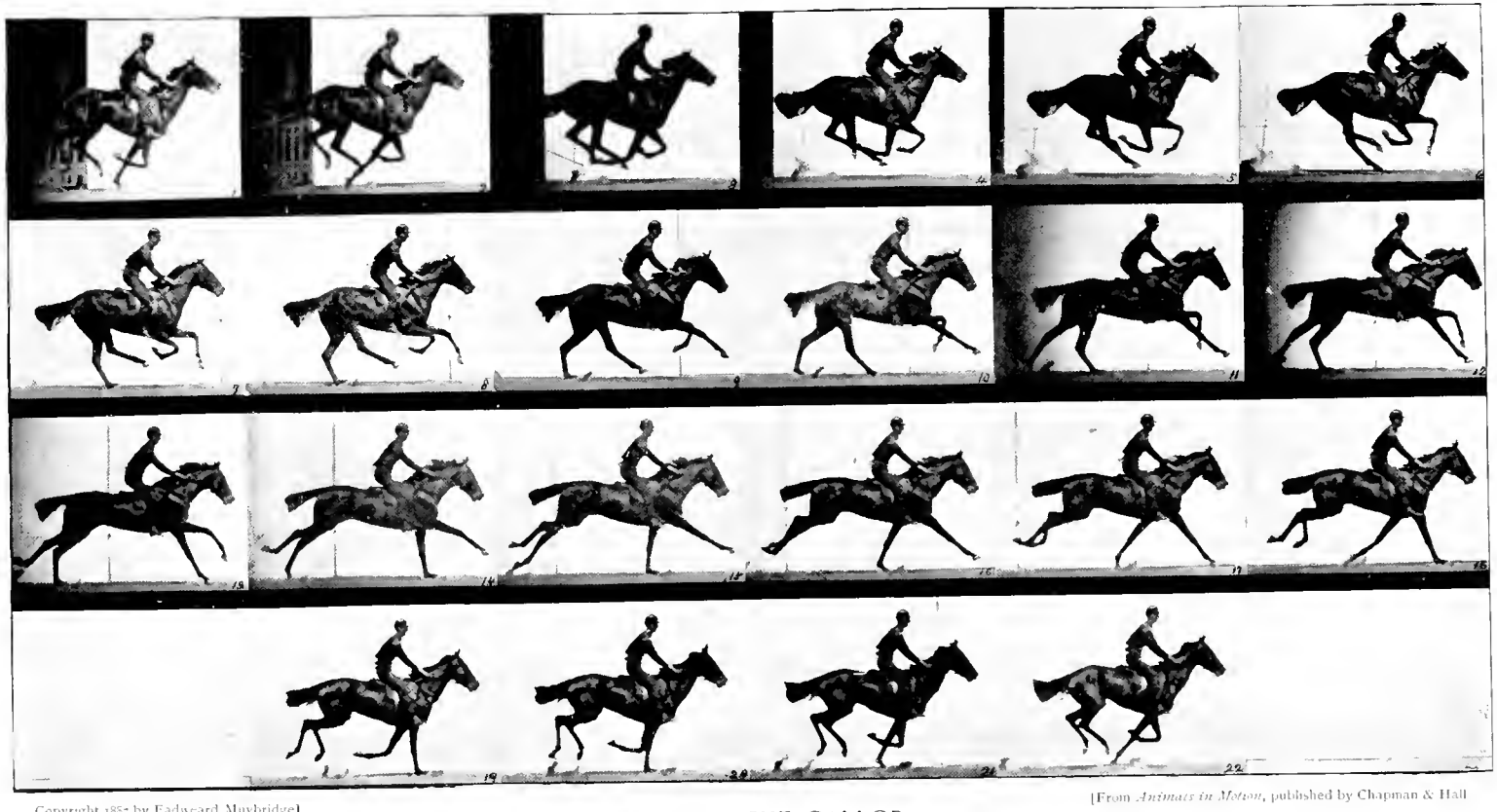


Fig. 65
Upright Foot

Upright Feet.—Feet so termed are deep in the crust, from the coronet to the ground surface, from heel to toe, and at the same time wanting in forward slope or obliquity. The direction of the pasterns in this formation follows more or less closely that of the feet, as a result of which the weight is directed towards the front of the foot, causing it to fall more immediately on the bony columns, and much of the elastic reaction of the tendinous and ligamentous structures behind is lost to the limb.

THE HIND LIMB

In dealing with this division of the body, it would have been more in accord with anatomical teaching to have commenced with a consideration of the pelvis as forming the upper extremity of the hind-limb, but as we have already dealt with it when speaking of the croup, it only remains to say that although the pelvis is the counterpart of the shoulders, its intimate connection with the spine, and the share it takes in enclosing the viscera, render it permissible to regard it for our present purpose as the posterior part of the trunk.



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PHASES OF THE GALLOP

[From *Animals in Motion*, published by Chapman & Hall

PLATE XII.

We have already pointed out that while the fore-limbs are united to the trunk by muscles alone the hind ones have the additional connection provided by the hip-joint, where the head of the femur (fig. 66) fits into the *acetabulum* or cup-like cavity formed by the bones of the pelvis. By this arrangement the hind extremities are brought to act directly on the haunch, and through it on the spine, so that as the feet grip the ground and the limbs straighten out by effacement of the articular angles, the body is forced forward in a succession of propulsive efforts which the muscles of the haunch impart to it. The various regions composing the hind extremity have their analognes in the fore one, but it is noticeable that the order of direction in the one is reversed in the other—at least so far as the upper segments are concerned. Thus, that portion of the pelvis which slopes downward and backward is the analogue of the shoulder, which slopes downward and forward.

The thigh, which passes downward and forward, is the counterpart of the humerus or upper arm, which slopes downward and backward.

The tibia or second thigh, whose inclination is downward and backward, is the equivalent of the radius or forearm, which is straight. The parts beneath these are more or less uniform in direction in the two members.

It will thus be seen that in both the fore and the hind extremities the ossific segments are so disposed as to form a series of angles which are more or less considerable in proportion to the length and slope of the bony levers.

In the act of progression these angles are alternately closed and opened, resulting in the consecutive shortening and lengthening of the limbs. On the extent to which these movements are capable of being effected will depend the length of the stride and the force of the impulse which the hind-limbs are capable of imparting to the body. In this connection it is observed that in speedy animals the angles below that of the shoulder in front and the pelvis behind are remarkable for their open condition, hence the peculiar straightness of the legs of the race-horse.

The greater obliquity of the shoulder and the more horizontal position of the croup in horses of speed tend to diminish the scapulo-humural and coxo-femoral angles, and, as Goubaux and Barrier observe, "facilitate the forward and backward movement of the inferior regions, and give them the freedom of extending themselves effectively to pass over the ground or communicate the impulsion". In horses of draught, where the steps are short, extreme lengthening of the locomotory column, so necessary to animals of speed, is not required. The shoulder therefore is less sloping, the croup more inclined, and the upper angles consequently more open. The lower angles of the limbs, which, as we have seen, are open in horses of

speed, are less so in horses of power. The greater obliquity of the movable segments of the limbs in the latter enable the muscles to act at much greater mechanical advantage than they otherwise would do.

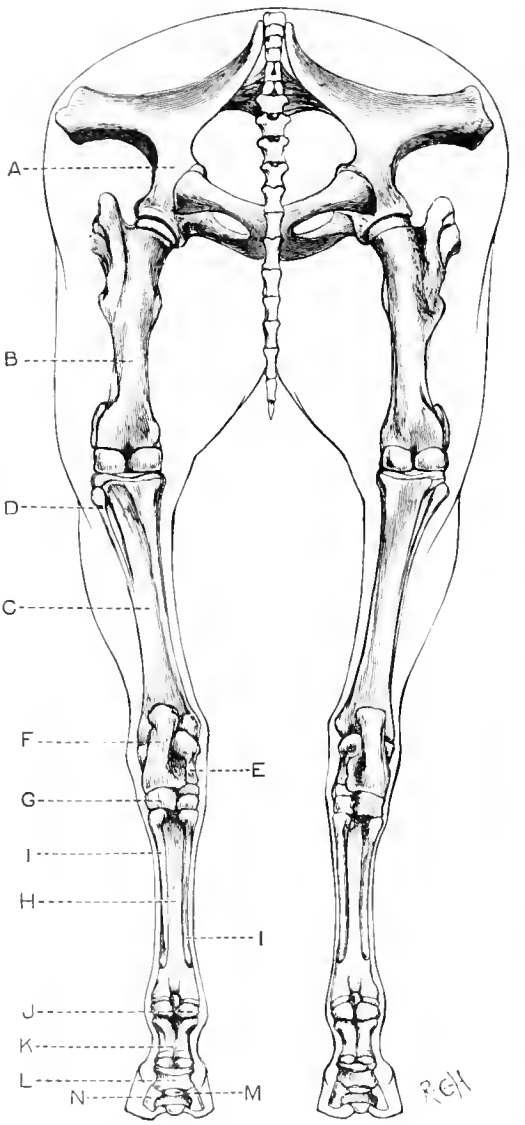

Fig. 66.—Posterior View of Pelvis and Hind Limbs of Horse

A, Pelvis. B, Femur or thigh-bone. C, Tibia or lower thigh-bone. D, Fibula. E, Astragalus. F, Calcaneus, forming point of hock. G, Cuboides. H, Large metatarsal or canon-bone. I, I, Small metatarsal or splint-bones. J, Sesamoid bones. K, Os suffraginis or large pastern. L, Os coronæ or small pastern. M, Navicular bone. N, Os pedis or Foot bone.

The hind-limbs, although assisting in supporting the body, are pre-eminently organs of propulsion. United by solid union to the pelvis above, and possessed of muscles larger and more powerful than those of the fore-limbs, they are in these and in other respects admirably constructed to exercise their power in the forward movement of the trunk. The manner in which this is effected will be best understood by reference to Plate XII, where it is seen that in commencing the fast gallop the first act of the horse is to bring the hind-limbs under the body and raise the forehand. The former at this time are shortened by the closing of the articular angles. Gradually these are again opened, and one after the other the legs are forcibly extended; and as they become more and more backwardly inclined, the body is forced forward to a point when the ground ceases to offer further resistance, and they leave it to take a fresh and more forward position in order that the movement may be repeated. It will be seen, therefore, that the greater impulsive force which the hind-leg is capable of transmitting to the trunk is due to the column of bones of which it is made up being directly and firmly connected with the trunk through the medium

of the hip-joint, a condition, as we have seen, which has no parallel in the fore-limb.

Thigh.—The thigh is the uppermost of the free-moving segments of the hind extremity. Viewed from without, it embraces that portion of the quarter enclosed within the limits of the croup and haunch above, the flank in front, the buttock behind, and the stifle and leg below. It has for its bony base the femur or thigh-bone, one end of which unites with the pelvis to form the hip-joint, and the other articulates with the tibia and patella to form the stifle.

The importance of the thigh in the function of locomotion is indicated by the mass of the muscles which enter into its formation. In no other region of the locomotory columns do these organs reach such volume and power. For the most part the forcible impulses by which the body is driven forward in the various modes of progression originate in the muscles of the thigh, and as an element in equine conformation this division of the body deserves the fullest recognition.

Not the least important consideration affecting this region is that it should be well directed, neither inclined unduly forward nor backward. When the former inclination prevails the leg as a whole is brought too much under the body, whereby its range of forward movement is curtailed, and its power is in some degree expended in raising the trunk at the expense of its propelling force. With a too backward inclination the limbs are carried too far to the rear, in which case the horse is said to "leave his legs behind him". It is also important in race-horses, hunters, and chasers that the inferior extremity of the thigh should be outwardly inclined, so as to clear the trunk when moved forward in the act of galloping and jumping.

Viewed in profile, the thigh should be broad and exhibit ample muscular development from top to bottom, or, as it is expressed, be "well let down". Seen from behind, it should be thick in proportion; any lightness in this dimension gives to the part a lean, "split-up" appearance, which is always a sign of weakness. [Plate VIII.]

LEG (SECOND THIGH)

That segment of the hind-limb situated between the thigh and the hock is properly designated the leg; more commonly it is spoken of as the second thigh. Two bones enter into its basement structure, the tibia and the fibula. The former is much the larger and more important of the two, and supplies well-nigh all the conditions pertaining to the mechanism of the region.

It is a requirement of all fast motors that the leg should be long, thus

providing for a large range of action, and also for the accommodation of muscles proportionate in extent. Any shortcoming in these respects diminishes the horse's stride, in which case the speed can only be kept up by multiplying his movements, which, of course, tends to physical exhaustion. With a long leg velocity of the gait is best served by a short canon.

As in the case of the thigh, the direction of the leg should neither be too straight nor too much inclined. A leg that is too straight brings the limb unduly forward, and shortens the step by limiting the power of extension, while one that is too much inclined throws the leg too far back and limits the power of flexion.

It is important that the superior part of this region should be well furnished with muscle brought down from a well-developed thigh and buttock. The lower part or "gaskin" should be wide, the hamstring thick and bold, and well set away from the bone (tibia) by connection with a long calcaneum or point of the hock. The longer this point is, the greater will be the length of the lever arm, and the more power will the muscles exercise in propelling the body forward by straightening the hock.

HOCK

This is the most complex, as it is also the most important, joint concerned in the mechanism of locomotion. It is here that the strain in the efforts of propulsion chiefly falls, and the joint at which the concussion thereby developed is for the most part broken and dispersed.

We may venture the statement that no joint in the body of the horse presents such a variety of natural conformation in different individuals as the one under consideration, and none calls for such careful scrutiny and analysis of detail both as to conformation and soundness.

Two sets of bones enter into the construction of the hock-joint, each having a purpose of its own. One group of four small bones (1, 2, 3, 4 in Fig. 67), arranged in two rows and resting on the head of the canon, are united together and to adjacent bones by short, powerful ligaments, and so close is the union that the movement of one bone upon the other is reduced to a simple gliding action of the most limited extent. This movement, slight though it be, is of the first importance in breaking the jar communicated to the joint in the act of progression.

The second division comprises two large bones — the astragalus and the calcaneus. The former presents in front two smooth, prominent ridges and a deep, intervening furrow, after the fashion of a pulley, which, when articulated with a corresponding formation on the lower extremity of the tibia or leg bone, form a joint whose action in the

Fig. 1. GOOD HOCKS

Fig. 2. WEAK FLESHY HOCKS

Fig. 3. CURBY HOCKS

direction of flexion and extension is marked by great range and freedom.

The calcaneus serves an entirely different purpose. Forming the point of the hock, to which are attached strong tendons (fig. 23), it represents a lever more or less powerful in proportion as it is long or short.

The examination of this joint should be made from various standpoints, so that all its dimensions as well as its general outline may be duly appreciated.

The first and most important requirement of this region is size. The hock should be large, shapely, and well directed. The calcaneus, or bone forming its "point", should be long, so that the lever of which it forms an important part is increased in length and power, while width and strength are at the same time imparted to the gaskins (Plate XIII, fig. 1).

Viewed in profile it should be wide from front to back and rest on correspondingly broad canons; any narrowing or "tying in" (Plate XIII, fig. 2) at this part is a serious defect of conformation.

Seen from before, the bend of the hock should be full and clean, with ample width from side to side well maintained and apportioned from top to bottom.

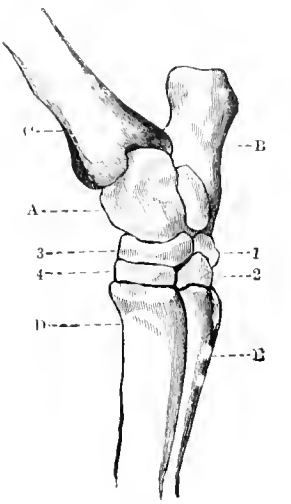

Fig. 67

A, Astragalus. B, Calcaneus. C, Tibia. D, Great Metatarsal or canon-bone. E, Splint-bone. 1-4, Small tarsal bones.

Quality is an important adjunct to strength and proportion, and will be marked by an absence of any appearance of roundness, a thin, supple skin from beneath which the bones stand out in sharp relief, imparting to the joint both leanness and neatness of outline.

Full, round, fleshy hocks in which all the anatomical parts are obscured, whatever may be their size and proportion, are objectionable, as they denote a common descent, a lymphatic temperament, and a lack of energy and endurance.

Given a large, well-directed hock, the power of the muscles which act upon it and the segments of the limb below it will generally be found proportionate in size and strength.

The direction no less than the form of the hock is materially influenced by the greater or less inclination of the tibia or second thigh above and the canon below.

When these bones approximate to a vertical position the hock and the limb as a whole are rendered straight, and the angularity of the

joint is least pronounced. It is this variety of conformation combined with length of limb that gives the race-horse his immense stride, and in turn enables him to extend the hind extremities to their farthest limits, and to realize all the power of his propelling muscles.

It matters not how strong the quarters may be, if the tibia or second thigh slopes too much backward, or the canon too much forward, the hock is no longer straight, and the power of extending the limb is more or less curtailed, and the speed proportionately diminished.

The importance of a straight hock and of a straight hind-limb generally, so manifest in the race-horse, is not an essential point in the conformation of the draught-horse.

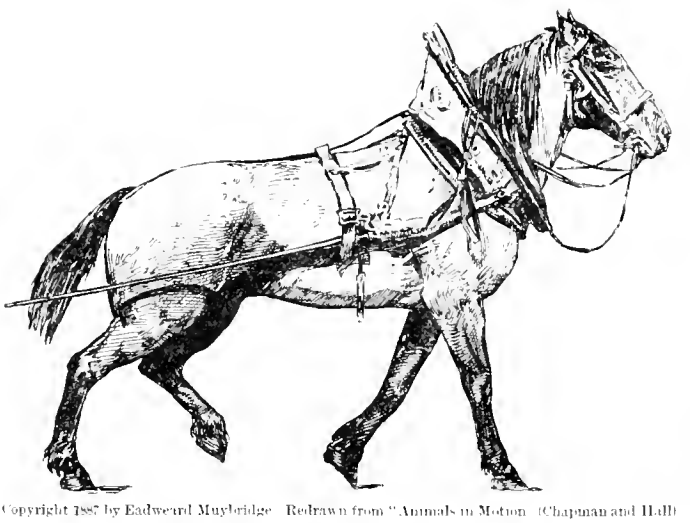

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Fig. 68.—The Hind-Limbs bent in drawing a Load

The great power which the latter puts forth in the act of draught is favoured by a greater obliquity of the bony segments, for in this position the muscles are able to act in a direction more at right angles to their levers, and consequently at considerable mechanical advantage. In shifting a heavy load the cart-horse takes advantage of this by bending the joints (fig. 68) so as to increase still further the obliquity of the bones and give more effective action to the muscles.

Acting in this attitude the limbs are less considerably extended, whereby the steps become short and the movements slow, but the power is greatly augmented.

In conformity with the anatomical disposition of the bones which form the true hock-joint, the movements of the hock are restricted to those of flexion and extension. In the former case the canon is carried forward and upward, in the latter it is drawn downward and backward. It is also noticeable that, viewed from behind, this joint is directed somewhat obliquely outward, so that its hinge-like formation is enabled to give the entire limb an outward inclination in its forward stroke, by which the stifle is prevented from being brought into contact with the belly, a provision of the highest importance to race-horses, chasers, and

hunters, where the hind-limbs while being raised require at the same time to be advanced well under the body.

COW-HOCKS

This term is applied to that defect of conformation in which the points of the hocks are turned in (fig. 69). Animals so constructed are not unfrequently defective in other respects, often leggy, badly coupled, split up, and narrow behind, with the toes directed unduly outward.

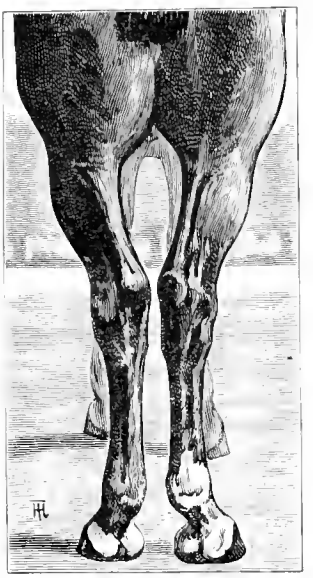


Fig. 69.—Cow-Hocks

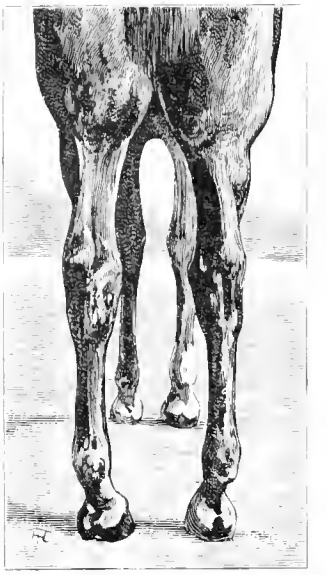


Fig. 70.—Bow-Legs

Although in-turned hocks in moderate degree do not interfere with a horse's usefulness, in the more pronounced cases it is not only an eyesore, but when coexisting with the other defects referred to, it is a mark of weakness, and materially impairs the action of the limbs, which are made to move too much away from the body instead of in a line parallel to it. As a result of this an awkward roll is imparted to the gait, and both power and speed are thereby more or less impaired.

BOW-LEGS

In this state of development (fig. 70) the points of the hocks are directed outward, the legs are set wide apart, and the toes are turned inward. This is not only a more unsightly defect than the one last referred to, but it impairs to a still greater extent the locomotive powers and usefulness of the animal. A striking feature of this variety of conformation is the peculiar rotary movement or outward twist of the hock which occurs at the moment when the foot comes to the ground. Moreover, viewed from behind, the gait is rolling and unsteady, the steps are short and wanting in liberty and grace.

SICKLE OR CURBY HOCK

In this variety of conformation (Plate XIII, fig. 3) the canon, instead of occupying a vertical position, inclines more or less forward, so that the leg is brought under the body, or, as it is said, the horse is "under himself behind". The effect of this is to increase the angularity of the hock and give it a bent or sickle-shaped appearance. In such a disposition of parts it results that "the column of support below the tibia being situated too obliquely forward, the pressure of the weight of the body, instead of being transmitted to the ground by the bones exclusively, as in the vertical position of this segment, causes a strain proportionable to the degree of obliquity on the ligaments which unite the hock to the canon, and imposes upon them an abnormal function" (Bouley). To this it might be added that by bringing the hind extremities more immediately under the centre of gravity, the strain on the extensor muscles and their tendons is considerably augmented.

Horses with curby hocks are not generally desirable property, although for harness-work, and especially in a level country, they may prove serviceable and enduring. They are not, however, adapted to carry heavy weights, or to put forth severe efforts of draught without injury.

BODY AND LIMBS

As we have already observed, the body and the limbs make up the sum of the height. In considering the latter, only those portions separate from the trunk are referred to, viz. parts below the elbow in front and the stifle behind. The rest is accounted for by the depth of the chest and the abdomen. The proportion which these two parts bear to each other will vary to some extent in animals of different types. All things being equal, the limbs of the race-horse and other light breeds are always longer than those of the heavier varieties.

"The body containing the organs which are most essential to life, such as the heart, the lungs, and the digestive apparatus, cannot be deficient from excess of development, since these organs are precisely those from which the animal machine draws its power and resistance. If disproportion seems to exist in the upper part compared to the lower part, then the latter is not properly constructed to support the former, but generally, although excess may not be objectionable, the same cannot be said of deficiency of development. Our machine having a weak chest, a small abdomen, will be without energy, without wind, and capable of very little

exertion. Such an animal will be a poor feeder, and will not last long. All these are great imperfections if he is called upon to perform laborious services. . . . The xiphoid region (pit of the stomach) should descend several fingers' breadth below the elbow, the ribs should be round, the chest wide behind, and a head wide in its middle part. The abdomen should be full, quite cylindrical, and a head thick from its inferior line to the middle of the back.

"As to the limbs, they cannot be too strong. As soon as such seems to be the case, the reason of it is that the upper part is not in proportion.

"If the supports of the motor are slender, weak, too long, and ill-adjusted—in a word, disproportionate in relation with the weight, . . . the most irreproachable body will be powerless; the machine will be without force, without solidity, without speed, and destined soon to wear out.

"Our way of ascertaining their disproportion consists in measuring the distance between the passage of the girth and the pastern-joint. It is known that, in a beautiful conformation, this distance is equal to a head in horses of ordinary size, a little longer in large horses, and a little less in small ones." (Goubaux and Barrier.)

DISTRIBUTION OF THE WEIGHT OF THE BODY

The weight of the body is borne by the fore and hind limbs, but its distribution between these two pairs of supports is not, as might be supposed, equally shared by them. The experiments of General Morris go to show, that with the head elevated and occupying a natural position, the proportion of body-weight sustained by the fore extremities is about one-ninth, or, eleven per cent greater than that supported by the hind ones. This difference in the disposition of the weight before and behind is capable of considerable modification. It is found that when the head is raised and drawn backward the weight imposed on the hind extremities is increased from 4 to 10 kilogrammes, from which the fore extremities are at the same time relieved. If, on the other hand, the head be lowered and drawn towards the chest, a like amount of weight is displaced forward.

Horses with long necks add more to the weight of the fore extremity than those whose necks are short and thick.

The following table, taken from Goubaux and Barrier's exhaustive work, gives the results which General Morris obtained in a series of experiments performed to establish the relative weight of the fore and hind extremity of the body.

Observations upon Horses	Weight. Head at forty-five degrees.			Weight. Head raised and drawn backward			Weight. Head lowered and drawn towards the chest.		
	Fore Extremity	Hind Extremity.	Total.	Fore Extremity	Hind Extremity.	Total.	Fore Extremity.	Hind Extremity.	Total.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Average of eleven horses, good combination, head and neck light	572	429	1001	550	451	1001	$587\frac{2}{5}$	$413\frac{3}{5}$	1001
Average of eleven horses, body well proportioned, neck short, head strong	$541\frac{1}{5}$	440	$981\frac{1}{5}$	528	$453\frac{1}{5}$	$981\frac{1}{5}$	550	$431\frac{1}{5}$	$981\frac{1}{5}$
Average of two horses, body well formed, neck short, head ordinary	528	429	957	517	440	597	539	418	957
Average of two horses, neck strong, head light	539	440	979	517	462	979	561	418	979
Average of two horses, neck long, head ordinary	550	429	979	528	451	979	572	407	979
One horse, neck strong, head strong, croup short and oblique	528	462	990	$519\frac{1}{5}$	$470\frac{4}{5}$	990	$536\frac{1}{5}$	$453\frac{1}{5}$	990
One horse, neck and body well formed, head strong	572	440	1012	550	462	1012	594	418	1012
One horse, neck strong, head strong	594	440	1034	583	451	1034	583	451	1034
One horse, neck strong, head strong	517	473	990	506	484	990	528	462	990

In considering this difference in the weight of the fore and hind extremity Goubaux and Barrier have succeeded in showing how materially it is influenced by the height of the withers. In a series of experiments, the particulars of which are given below, they demonstrate that in horses low in front the fore-limbs are permanently surcharged with weight, and in proportion as this condition exists so will be the liability to undue wear and tear of the fore-legs, especially where the nature of the occupation compels the imposition of weight on the back; and conversely, that a low croup favours the imposition of undue weight on the hind-limbs.

From the accompanying tables it will be seen how the distribution of weight on the fore and hind extremities may be increased or diminished by certain attitudes which the animal may assume, as well as by the fixed conditions of natural conformation.

These changes are but some of many more or less pronounced, which must necessarily result from displacements of the centre of gravity occurring in the various phases of locomotion.

The manner and the importance of these displacements will be best understood when considered in relation to that condition which is known as equilibrium.

ELEVATION OF THE HEIGHT AT THE WITHERS

Order of Numbers.	Height at Withers.		Height at Croup.		Total Weight.	Distribution of Weight.			Increase in Height at the Withers		Distribution of Weight			Observations.
						Anterior Quarters	Posterior Quarters.	Excess of Anterior Quarters.			Anterior Quarters.	Posterior Quarters.	Excess of Anterior Quarters.	
	Hds.	Ins.	Hds.	Ins.	lbs.	lbs.	lbs	lbs.	Hds.	Ins	lbs.	lbs.	lbs.	
1	14	2	15	0	1023	550	473	77	1	0	539	484	55	Common mare.
2	16	2	16	3	1513	822¼	690¼	132	1	0	809	704	105	Percheron gelding.
3	14	1	14	2	941	539	402	136	1	0⅓	523	418	105	Common mare.
4	14	1	14	1	690¼	404¼	286	118¼	1	0⅓	385	305¼	79¼	Barbary mare.
5	15	2	16	0	1073	598	475¼	123	1		589	484	105	Thoroughbred horse.
6	16	0	15	3	1157⅓	677	479	198	1/10		673¼	484	189¼	Norman gelding.
7	16	1	16	1	1254	682	572	110			677	576	101	Percheron gelding.
8	16	1	16	0	1210	682	528	154			675	534	140	Norman mare.
9	13	1	13	3	726	440	286	154			429	297	132	Corsican gelding.
10	14	2	14	3	979	572	407	165			561	418	143	Irish cob.
11	16	1	15	3	1386	814	572	242			803	583	220	Boulon gelding.
12	15	1	15	0	1001	633⅓	367½	266¼			624¼	376¼	248	Percheron gelding.
13	14	3	15	0	902	539	363	176			506	396	110	Corsican gelding.
14	15	3	15	3	1023	572	451	121			550	473	77	German gelding.
15	11	1	11	3	517	301⅔	217⅓	85¼			275	242	33	Female ass.

ELEVATION OF THE HEIGHT AT THE CROUP

Order of Numbers.	Height at Withers.		Height at Croup.		Total Weight.	Distribution of Weight.			Increase in Height at the Croup.		Distribution of Weight.			Observations.
						Anterior Quarters	Posterior Quarters	Excess of Anterior Quarters			Anterior Quarters	Posterior Quarters	Excess of Anterior Quarters	
	Hds	Ins.	Hds.	Ins.	lbs.	lbs.	lbs.	lbs.	Hds	Ins.	lbs	lbs.	lbs.	
1	14	2	15	0	1023	550	473	77	1	0	567½	455½	112¼	Common mare.
2	16	2	16	3	1513	822¼	690¼	132	1	0	836	677	148	Percheron gelding.
3	14	1	14	2	941	539	402	136	1	0⅓	554	387¼	167¼	Common mare.
4	14	1	14	1	690¼	404¼	286	118¼	1	0⅓	409	281	127	Barbary mare.
5	15	2	16	0	1073	598	475¼	123	1		613	459¼	154	Thoroughbred horse.
6	16	0	15	3	1157⅓	677	479	198	1/10		710	446	264	Norman gelding.
7	16	1	16	1	1254	682	572	110			686	567	118¼	Percheron gelding.
8	16	1	16	0	1210	682	528	154			693	517	176	Norman mare.
9	13	1	13	3	726	440	286	154			446	279	167	Corsican gelding.
10	14	2	14	3	979	572	407	165			506	473	33	Irish cob.
11	16	1	15	3	1386	814	572	242			818	567	250¼	Boulon gelding.
12	15	1	15	0	1001	633⅓	367½	266¼			644	374	270	Percheron gelding.
13	14	3	15	0	902	539	363	176			574	330	244	Corsican gelding.
14	15	3	15	3	1023	572	451	121			583	440	143	German gelding.
15	11	1	11	3	517	301⅔	217⅓	85¼			312	204⅔	107¼	Female ass.

HEIGHT

The height of a horse is the vertical distance from the highest point of the withers to the surface on which he stands. It is made up of two parts —the body and the legs, the relations of which we shall refer to presently.

Although horses are divided into a number of classes or varieties, it is only in one of these that a limit is set to the height. Everything equine not exceeding 14 hands, of whatever character, is termed a pony, while undersized horses of a certain type are designated "cobs"; but to this latter class there is no precise limit of vertical measurement as recognized in the former. It is, however, to the diminutive pony that we owe the more portentous horse, for the latter is but an enlarged edition of the former, evolved by a process of selection, judicious mating, high feeding, and skilful management. Returned to their native element, outside the sphere of civilization and land culture, and the present race of stock would soon decline both in stature and symmetry, and ultimately return to the miniature condition from which they sprang.

Between the smallest pony and the highest horse there is great disparity of size, and it will be recognized that towards both extremes usefulness gradually declines, and beyond certain limits reaches an unremunerative, if not a vanishing point.

Within the two extremes there are to be found all intermediate sizes suitable to the many requirements of civilized man, but the tendency of systematic breeding has been not only to fix the type of each distinct variety, but at the same time to bring the height up to, and maintain it within, the limits of the greatest practical usefulness; for there is unquestionably a point in the upward growth of this, as of other species of animals, beyond which the harmony of proportion becomes so far disturbed as to curtail seriously both power and pace.

Height, although largely identified with power, cannot be regarded as a precise measure of strength and endurance. Numerous examples will occur to the mind of experienced horsemen, of small horses outpacing and vanquishing their much larger confrères. That unspeakably game little animal, The Lamb, which won the Grand National at Liverpool on two occasions, was only 15.2 hands high, and yet he outstripped in speed and endurance many brilliant chasers inches higher than himself, and when nine years old carried 11 st. 5 lb. to victory. It is difficult to say precisely what is the limit of stature within which the greatest usefulness is to be found in our various breeds, and probably opinions would be found to be very much divided on the subject.

The writer, however, believes that in the cart-horse it will be found at 17 hands, in the race-horse at 16.2, and in the riding-horse and carriage-horse at 15.3.

"When the height at the withers is considered in relation to height at the croup, observations show that these points are situated upon the same horizontal line or upon different levels. In the latter case the horse is

said to be *high* or *low in front*, according to the corresponding height at the croup. There results evidently from this an abnormal distribution of the weight of the body upon the four extremities; this at least is the result of our measurements and our weighings.

"A lowering of some centimetres at the withers usually causes a surcharge of the anterior members, and therefore modifies the conditions of the equilibrium and the velocity of the gait. These drawbacks increase in proportion to the burden carried on the back, which is often added to the subject's own bulk. Lastly, the region of the withers is more exposed, on account of its prominence, to contusion and wounds caused by the harness.

"Inverse effects accompany the diminution of the height over the croup. The hind-quarters, surcharged in their turn, are wanting in action and are obliged to use greater efforts; the hocks are soon ruined.

"But these different disadvantages, with their grievous consequences, manifest themselves only when the inequality in the height of the two parts is very marked. When it is slight, it is but little perceived in practice. Besides, it has not the same importance in all services. The cavalry-horse, the pack-horse, and the dray-horse, always heavily loaded, will show the effects of being *low in front* much sooner than the race-horse, the coacher, the trotter, or the light draught-horse. These latter, on the contrary, in which speed is the main quality, suffer much more from a defect in the hind-quarters; an excess of height of the croup over that of the withers is a favourable disposition in them, while an equality of the height in front and behind is the best conformation in the others. Many horses of good breeding and of great speed have the croup considerably higher than the withers; this conformation is even very much appreciated by horsemen, especially in hunters and steeple-chasers. It should not be forgotten, however, that the overloading of the anterior members is compensated by the relative lightness of the fore-quarters and the power and great length of the hind-quarters. Here, as with the hare, according to M. Richards' comparison, the posterior limbs are carried far under the trunk, their foot-prints are much beyond those of the anterior, the hind-quarters are strongly built, the croup and loins are vigorous and well supported, the spines of the dorsal vertebræ are long, and the shoulder very oblique. There is then truly a compensation." (Goubaux and Barrier.)

LENGTH

The length of the body is the distance from the point of the shoulder in front to a line falling from the point of the buttock behind. Although varying in different animals, it will be found, as first pointed out by

Bourgelat, that in most well-formed horses it equals about two and a half times the length of the head, and it would seem that any considerable departure from this rule, either in regard to excess or deficiency, tends to render the conformation more or less seriously defective.

In dealing with this part of the subject it will be important to consider what are the elements by which the length of the body is determined, and

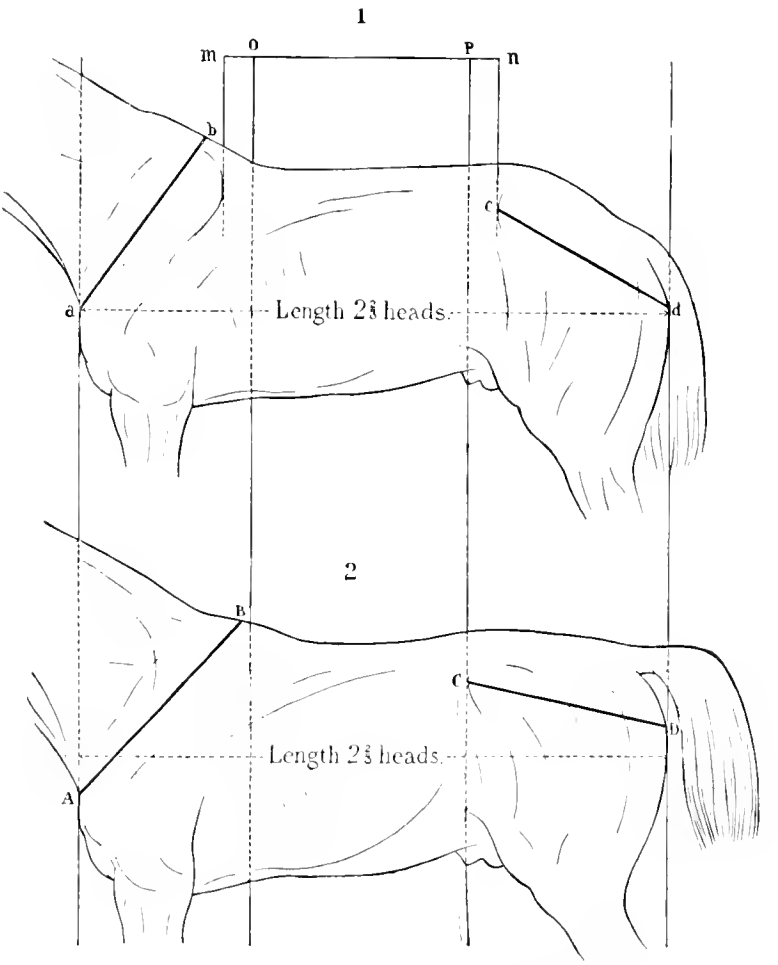


Fig. 71.—Excessive Length from two different Causes

After Goubaux and Barrier. (By permission of Messrs. Lippincott)

what are the relations in which they stand to each other. In answer to the first question it may be stated that the parts which concur to make up the sum of the body-length are the spine, the shoulder, and the buttock. The two latter furnish the anterior and posterior extremity respectively, while the former intervenes to form the back and loins. As we have already observed, the length of the body in a well-formed horse is about

equal to two and a half times the length of his head, and whether it is more or less will depend upon the length of the spine on the one hand, and the extent, direction, and relations of the shoulder and croup on the other. It is to De Saint-Ange[1] that we owe the figurative expression of these interesting facts, as shown in the following illustrations.

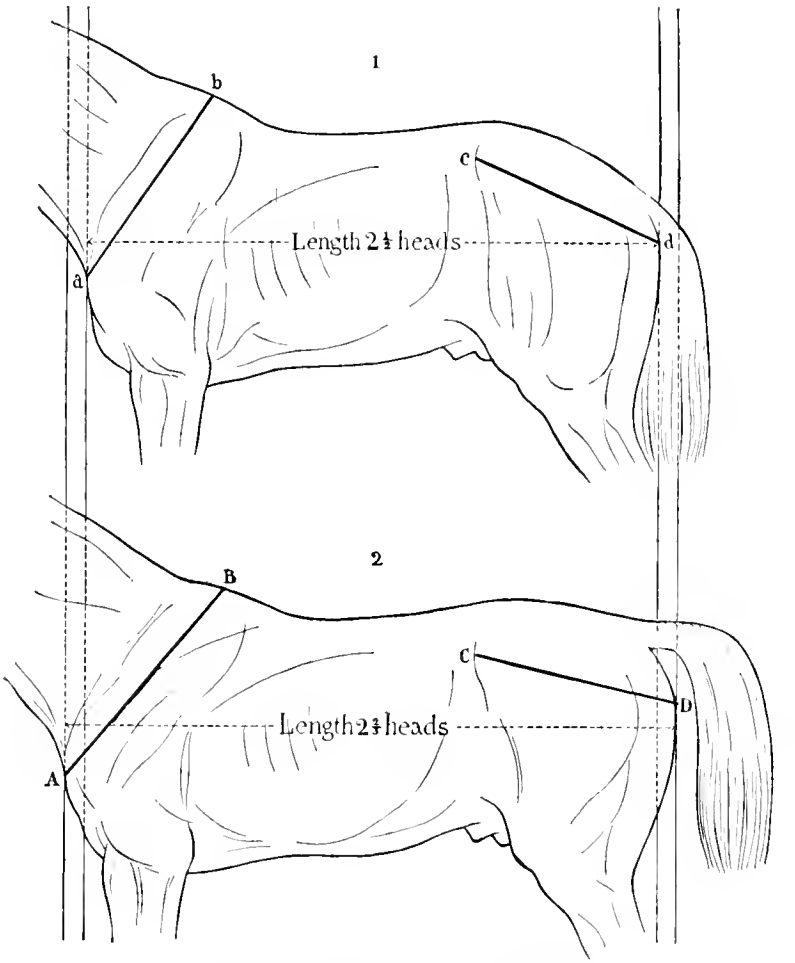


Fig. 72.—Compensation for Excessive Length

After Goubaux and Barrier. (By permission of Messrs. Lippincott)

Comparison of diagrams 1 and 2 (fig. 71) will show how the length of the body is influenced by each of these causes.

Both the animals represented in the illustration are of equal length, a d, A D, but both exceed the stipulated two heads and a half from one extremity to the other. The excess of this dimension in diagram 1 is clearly the result of undue length of the back, or dorso-lumbar portion of the spine,

[1] De Saint-Ange, *Cours d'hippologie*, t. i, p. 154; Saumur, 1850.

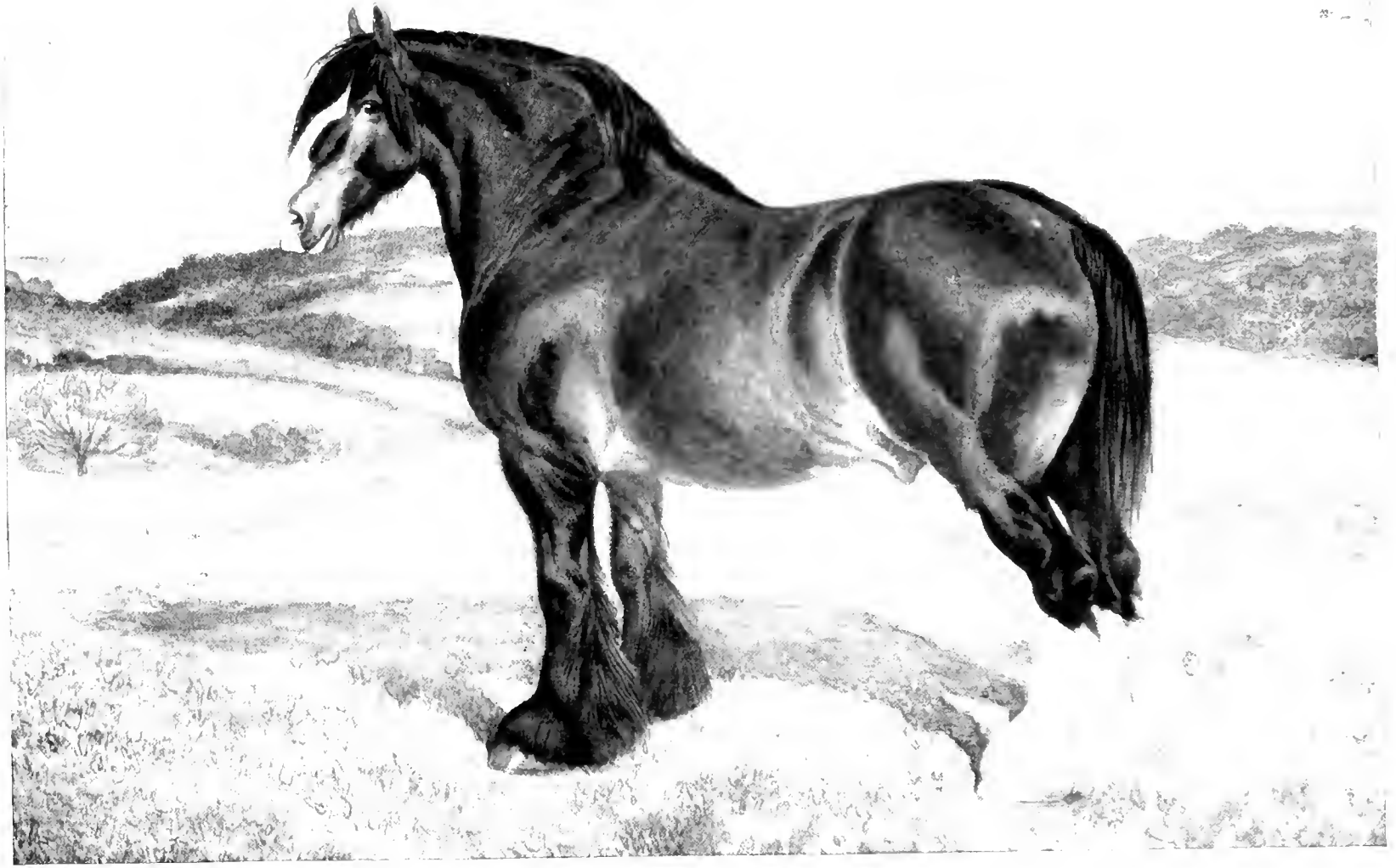
m n, while in the other it arises out of the more extended quarters, C D, and greater obliquity and length of the shoulders, A B.

The too great length arising out of the first-named cause is a serious defect of conformation, as the loins in such cases are weak and badly supported by the quarters, and the great distance between the posterior scapular angle and the haunch, m n (which in a well-formed horse should not exceed the length of the head), robs the back of that solidity and strength which it would otherwise possess.

Although undue length of body is a fault of conformation, it is capable of being compensated within certain limits by the harmonious proportions and disposition of the shoulder and croup. Indeed an animal so constituted may surpass in symmetry and physical excellence one whose length falls within the classical range of two heads and a half. A striking example of this is shown in the illustration fig. 72. Here the body of diagram 2 exceeds in length that of diagram 1 by one-sixth of a head, but this difference, which under other circumstances would constitute a serious defect, is compensated by a short back and a high development and favourable inclination of the shoulders and quarters, A B, C D.

WIDTH

Although dependent in a large measure on the amplitude of the osseous framework, the width of the body is largely influenced by the development of the muscles which envelop it. To appreciate the transverse diameter of the trunk it is necessary that our inspections should be made from different points of view, especially from before and behind, while a glance from above will materially aid in rendering our estimate of the proportions of this part more satisfactory and complete. In all varieties of the horse ample width is essential to power and endurance; any shortcoming in this respect not only betrays a lack of muscular development, but is usually associated with flat sides and want of chest-room. Narrowness is a serious defect of conformation. Viewed from the front the breast should be wide, the shoulders muscular, the ribs well sprung, and the hips broad and full of muscle. The magnitude of the body in this respect will vary for animals of different types, but in due proportion it should be insisted upon in all. In horses for speed width is especially desirable behind, where the propelling power resides, while too much in front would tend to encumber movement and impose undue weight and wear on the legs.



SHIRE STALLION, HAROLD

PROPORTIONS OF HEIGHT TO LENGTH

What is the most desirable relation in the proportions of height to length is a matter upon which opinions may differ, but it is held by those who have thoroughly studied the question that the most perfect conformation will be found where the dimensions of the one most nearly approximate to those of the other. Here it should be pointed out that the so-called "long low" horse so much admired by connoisseurs is not, as it seems to be, so much greater in length than height, but owes the apparent discrepancy of proportion in these dimensions to the fact that he stands on shorter legs, and is consequently nearer the ground. In this way he is made to look low, but the greater depth of body which such animals usually possess add materially to their height.

"Any considerable excess of height over length is always a serious defect of conformation. Animals so constructed are mostly narrow, deficient in muscle, light of bone, and slow in their paces; they are liable to brush and to forge, and soon become fatigued under exertion. Not less objectionable is the animal whose height falls appreciably short of his length, when that length is of the classic measure of two heads and a half. In this case the disproportion will impart to the machine a heavy cumbrous aspect. Moreover, there will be a distinct lack of liberty, range, and grace in the movements, and his shorter limbs will preclude the possibility of any considerable pace." In further discussing this subject Goubaux and Barrier observe: "Many persons imagine that fast horses, trotters and others, are longer than they are high, and they assign to the length a quarter of a head, or even a third more, than to the height, a suggestion which is in direct opposition to the reality. . . . Our measurements upon the handsomest running horses, steeple-chasers, Orloff trotters, Anglo-Norman and Arabian, Barb, Andalusian, some Hungarian and American horses, enable us to affirm that the excess in length, scarcely amounting to 1, 2, 4, or 5 centimetres, is the exception, the equality or excess in height permitting variations of the same value being the rule." In the heavier breeds of horses excess of length over height is both more frequent and considerable than in the lighter varieties, but in the most approved specimens of the former the disparity is least and less frequently in evidence.

THE HEAD AS A UNIT OF MEASUREMENT

Ever since the days of Bourgelat the study of proportions in respect to the various regions of the horse has been more or less vigorously pursued,

especially by French hippotomists, and it is to the founder of veterinary schools we owe the first serious attempt to "establish the relation of the dimension which should exist between the parts of the body", or, in other words, a law of proportion. As a result of numerous measurements, Bourgelat selected the head as a basis of proportion for all other parts, and the more

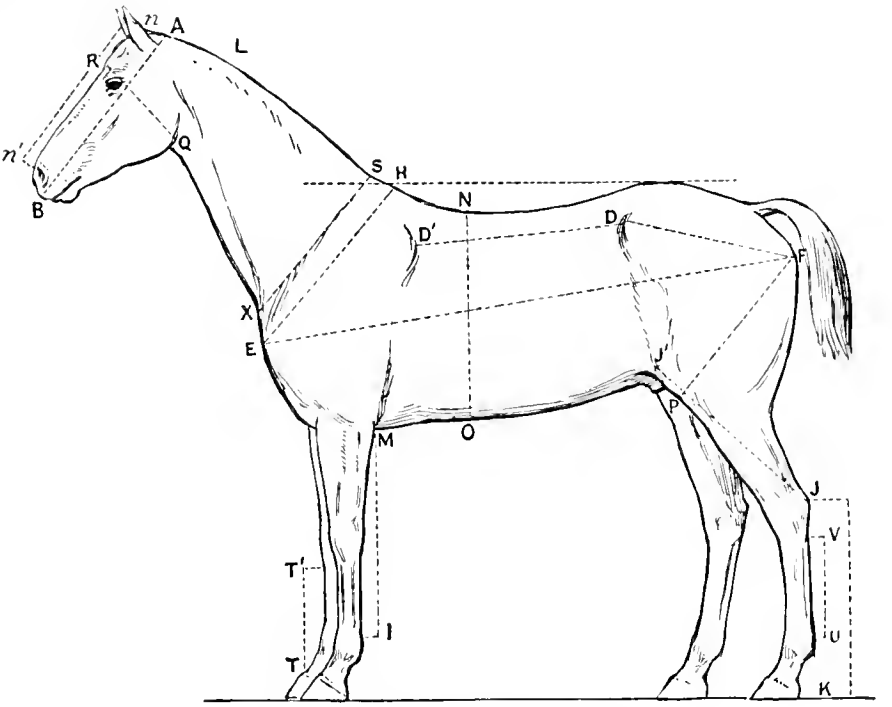


Fig. 73.—Proportions of the Horse in Profile

From Goubaux and Barrier. (By permission of Messrs. Lippincott)

recent researches of the distinguished savant Colonel Duhousset led him also to adopt this region as a unit of measure.

The results of his observations are recorded by Goubaux and Barrier, from whose able work on the *Exterior of the Horse* we extract the following list of proportions:—

The length of the head almost exactly equals the distance—

1st. From the back to the abdomen, N O, fig. 73 (thickness of the body).

2nd. From the top of the withers to the point of the arm, H E (shoulder).

3rd. From the superior fold of the stifle-joint to the point of the hock, J' J.

4th. From the point of the hock to the ground, J K.

5th. From the dorsal angle of the scapula to the point of the haunch, D' D.

6th. From the xiphoid region to the fetlock-joint M I; above this latter in large horses and race-horses, below it in small horses, and in those of medium size.

7th. From the superior fold of the stifle-joint to the summit of the croup in subjects whose coxo-femoral angle is large: this distance is always less in other cases (G. & B.).

Two and one-half times the head gives—

1st. The height of the withers, H, above the ground.

2nd. The height of the top of the croup above the ground.

3rd. Very often the length of the body from the point of the arm to that of the buttock, E F.

The length of the croup from the point of the haunch to that of the buttock, D F, is always less than that of the head: this varies from 5 to 10 centimeters. As to its width from one haunch to the other, it often exceeds only very little its length (often it is equal to the latter) (G. & B.).

The croup, D F, exists quite accurately in length four times in the same horse.

1st. From the point of the buttock to the inferior part of the stifle-joint, F P.

2nd. In the width of the neck at its inferior attachment, from its insertion into the chest to the origin of the withers, S X.

3rd. From the insertion of the neck into the chest to the angle of the lower jaw, X Q, when the head is held parallel to the shoulder.

4th. Finally, from the nape of the neck to the nostril, *n n'*, or to the commissure of the lips.

The measure of one-half the head will also guide us very much in the construction of the horse, when we know that it is frequently applied to several of his parts, namely:

1st. From the most prominent point of the angle of the lower jaw to the anterior profile of the forehead above the eye, R Q (thickness of the head).

2nd. From the throat to the superior border of the neck behind the poll, Q L (attachment of the head).

3rd. From the inferior part of the knee to the coronet, T' T.

4th. From the base of the hock to the fetlock, V U.

5th. Finally, from the point of the arm to the articulation of the elbow (approximate length of the arm).

COMPENSATION OF DEFECTS OF CONFORMATION

The perfect horse is an unknown and unknowable quantity, for however perfect judgment of his physical conformation may be, it is impossible for the most astute and experienced of horse experts to gauge with precision the absolute and relative value of his many and various component parts. From a general view-point, it may be affirmed that all horses, however beautiful they may be, are still but a combination of excellencies and defects, and upon the predominence of the one or the other will depend in a large measure his utility and value. It must not, however, be forgotten that faults of conformation, although at all times objectionable, are not always of that serious practical importance which the uninitiated assign to them, for, as Goubaux and Barrier observe, "it frequently happens that a good quality annuls a defect, or that one defect may be counterbalanced by another whose influence is diametrically opposite".

The following long list of examples of this kind we reproduce from their exhaustive treatise on the *Exterior of the Horse*.

Defects.	*Corresponding Compensations.*
Too voluminous head	Neck rather short, well-muscled.
Head too common	Ears well-placed, eyes expressive, physiognomy bright.
Neck too short	Head light, well-attached, withers prominent, shoulder beautiful.
Withers thick and fleshy	High in front, beautiful shoulder and good axes in front.
Withers low	Hind-quarters powerful, fore-quarters light, good equilibrium, members strong.
Back long and sway-backed	Croup strong, body muscular, loins short, well-attached; abdomen small.
Back short and narrow	Chest high and long.
Loins long	Body well-muscled, loins well-attached, ribs very projecting behind; croup oblique; shoulder beautiful, fore-quarters light.
Chest narrow	Ribs long, very projecting backward; intercostal spaces wide.
Chest scarcely low enough	Chest wide and long.
Abdomen very voluminous	Body short and strong, well-supported; flanks short, chest spacious, members strong.
Greyhound abdomen	Good condition, good appetite, firm, dense muscles, but not too nervous a temperament.
Breast rather narrow	Chest spacious, muscles dense, energetic, good anterior equilibrium.
Breast somewhat wide	Body of rather small volume, gaits easy, not rocking, strong members.
Shoulder short	High in front, withers prominent, neck long, shoulder oblique and muscular, arm long.
Shoulder straight	Body short, hind-quarters powerful, withers prolonged backward and high, neck long and straight.
Arm short and too straight	Shoulder long, oblique, muscular, beautiful neck and withers, good equilibrium.
Forearm a little short	Beautiful shoulder, arm long, humero-radial angle large, forearm muscular.
Forearm slender	Shoulder and arm muscular, canon short, tendons well-detached, good anterior axes.
Canon long and slender, tendons weak	Forearm wide, thick, muscular; members solid, muscular, good axes, neck well-carried, head light, high in front.
Croup a little short	Thigh rather low down, muscular, rather straight; loins short, supported, well-attached, fore-quarters light, hocks good.
Croup a little oblique	Ischium straightened, thigh inclined, hocks good, axes regular, tail well-attached, croup long.
Croup a little narrow	Croup long, with sides inclined, muscular loins well-attached.
Croup too horizontal	Thigh long, little inclined, muscular; leg long, good axes, body a little long to avoid forging.
Thigh too straight	Croup horizontal, leg long, inclined; good equilibrium.

Defects.	*Corresponding Compensations.*
Thigh thin and short	Croup and leg long, powerful; body short, well-supported, fore-quarters light.
Leg short and too oblique	Thigh long, straight, muscular, hocks strong, good axes.
Leg too straight	Thigh oblique, hocks wide, good axes, body a little long to avoid forging.
Hock weak	Leg, thigh, and croup muscular; loins strong, well-attached; fore-quarters light, a little low, but of good equilibrium.
Pastern long	Heels high, tendons well-detached, good axes, fore-quarters light, withers high, fetlocks wide.
Pastern short	Heels low, axes regular, withers high, fore-quarters light.
Heels too low	Pastern straight, horn good, frog large, sole concave.
Body somewhat long	Chest deep, flank short, body well-supported, croup and shoulders long, oblique, muscular.
Body rather short	Members short, locomotory angles convenient, gaits easy.
A little low in front	Head light, neck long, straight, well-attached; withers prominent, shoulder oblique, arm straight, articulations wide, thick, tendons well-detached, good axes, hind-quarters powerful.
Too low behind	Fore-quarters light, croup, thigh, and leg powerful; hocks strong, loins strong, good posterior axes.
Members too long	Body light, chest developed; tendons detached, muscular development good.
Horse under himself in front ...	Neck straight, well-attached; shoulder oblique, fore-quarters powerful, and elevated in relation to the hind-quarters; articulations thick, wide tendons well-detached.
Horse knee-sprung	Powerful muscles of the shoulder, the arm, the forearm; neck straight, withers prominent, body well-supported.
Horse under himself behind	Fore-quarters light, rather low than high, hind-quarters very muscular, loins powerful, hocks wide, thick, clean.
Shortened gaits	Energy, vigour, rather nervous temperament.

VARIETIES OF THE HORSE

Section III

VARIETIES OF THE HORSE

ENGLISH BREEDS

The Thoroughbred. — A really good Thoroughbred is beyond all question the most valuable horse in the world, as not only is an animal of this description capable of winning a fortune for his or her possessor on the turf, or at the stud, but there are few other breeds of horses which are not capable of being more or less improved by a dash of Thoroughbred blood. At the same time, a difference of opinion unquestionably exists amongst experienced horse-breeders as to whether the Thoroughbred of the present day is the equal of the illustrious heroes of the past, whose records are affectionately treasured up by racing men, and whose achievements are indelibly impressed upon the memories of race-goers of a bygone generation. Upon one point, however, there can be no question at issue, namely, that the modern race-horse is required to prove his value upon the turf under totally different conditions from those which existed in the past. The ancient and barbarous custom of running races in long heats has happily fallen into discredit, the tendency of the present age, until a very short time ago, being to devote the programmes of race-meetings almost entirely to short scrambles of under a mile; but recent Turf legislation has pronounced against this practice, with the result that longer races appear on every card. This unquestionably is for the benefit not only of the British Thoroughbred but of the Turf, as the results of five and six furlong races are very often more dependent upon the skill of the jockey in getting away than upon the speed of his mount, whilst the question of a horse's stamina can never be settled if he is not asked to go more than a mile during his racing career.

It has been argued too, and with a considerable amount of justice, that the practice of forcing yearlings for sale, and confining the young stock, and adults likewise, in hot unhealthy stables, is not calculated to improve their stamina and constitution. Yearling races, however, are now unknown events, whilst our two-year-olds have also been taken beneath the sheltering wing of the Jockey Club, so that it is illegal to run them

before a certain date. The institution of so many valuable stakes in recent times has had the effect of encouraging owners to avoid meeting a dangerous opponent, by saving their animals for other engagements in which the dreaded horse, or horses, may not be entered, and this very greatly increases the difficulty in comparing the merits of many public performers. The time test is always unreliable, for, placing on one side the extreme difficulty of starting the watch at the moment of starting and finishing a race, there are no possible means for making allowances for the little accidents which occur whilst running, but which may make a good horse's time slow, or a moderate one's fast. As a consequence, we find quite second-rate horses the possessors of records which cannot be approached by those held by animals which would have beaten them by many lengths had they met when the "fastest time" was accomplished; and therefore, with all due respect to our cousins across the Atlantic, who place almost implicit confidence upon the clock, the opinion may be repeated that, as a means of arriving at a conclusion concerning the merits of different horses, the time test is not to be relied upon. In the old days, before the advent of stop-watches and professional time-keepers, the reported records were even more unreliable still, and in fact cannot be accepted seriously by persons who set themselves the task of analysing form, and who may be pardoned for expressing their disbelief in the ability of even that great horse Eclipse to cover 4 miles at an average speed of something like 80 feet a second.

At the same time, there are reasonable grounds for believing that there were far more stayers running at the commencement of the nineteenth century than can be found at the present time, but it is questionable nevertheless whether this may not be in a great measure due to the fact that it is an exceptional circumstance for a modern race-horse to be trained for a long race. The shorter events are still so decidedly in the majority that there is very little inducement for an owner to try and find out whether his horse can stay over a long distance; and therefore, doubtless owing to there being no encouragement to test his merits, many an animal possessed of stamina is regarded as being quite a second-rater, though if he had been given a proper chance for distinguishing himself he might have won almost undying fame.

It certainly is to be hoped that this is the case, for, as the Thoroughbred is largely utilized as a cross for other varieties of horse, and notably in the production of the Hunter, it is evident that the services of a sire that is not only bred to stay, but can stay, are more valuable than those of animals which could not have got beyond six furlongs in their racing days. On the other hand, there are good and solid grounds for believing

PLATE XIV.

BROWN HORSE, ARD PATRICK

By St. Florian, out of Morganette by Springfield, out of Lady Morgan
Winner of the Derby, 1902, &c. &c. Sold to the German Government for 20,000 guineas

that the by no means uncommon, but on the other hand very general practice of bringing up Thoroughbreds as though they were as delicate as hothouse plants, cannot but have the effect of reducing the robustness of their constitution; whilst the insane craze that exists for the blood of "fashionable sires" can only end in such close inbreeding that before another century, or even half a one, has elapsed, it is extremely likely that breeders will find themselves at their wits' end for a cross. This is a real danger which will have to be faced sooner or later, but it is one which the horse raisers of fifty years ago most probably never contemplated. In the first place, a much stronger rivalry then existed between the stables in different parts of the country, and *esprit de corps* rather forbade the racing public flocking in the direction of one or two favoured sires; whilst in the second place, in the early days of railways, and before their introduction, the conveyance of mares from place to place was not so easy a matter as it is now. The latter circumstance may possibly be utilized as an argument in support of the theory that inbreeding was a greater danger in the past than in the present, as owners experienced greater difficulty in getting their brood-mares away from home; but the fact remains that at no time in the history of the Turf were the services of a limited number of popular sires so greatly in request as now, and consequently, when their offspring come to be bred from, there must in a generation or two be a great deal of inbreeding which cannot fail to cause trouble. Be this as it may, however, the modern Thoroughbred as he at present exists is undoubtedly a bigger animal than his ancestors, and consequently, according to the *dictum* "a good big one is always better than a good little one", the supporters of the latter-day horse have this on their side when they contend that he is a superior all-round animal to those of a bygone era. A doubt has been expressed above, whether the present race-horses are as sound as their predecessors, and the opinion is entertained by some of the most experienced trainers, that in stamina and constitution the old horses were the superior. It certainly appears that even one generation ago the horses were called upon to accomplish more in public than they are at present, whilst at the period when heat-racing was in vogue, if the number of races in which an animal actually ran were not so many, the miles he galloped were very often more; an illustration being the case of Eclipse, who won thirteen King's plates, in eleven of which he carried 12 stone and in two 10 stone on his back.

Having attempted to direct attention to a brief comparison between the Thoroughbreds of the past and present, the writer now purposes to devote a portion of the space at his disposal to a reference to the sport

of racing as it existed many years ago in this country, this being in his opinion desirable as proving that, although the modern race-horse is doubtless descended from three great Eastern stallions, which will be named in due course, the sport flourished in this country long before the sires in question were foaled, and that, consequently, it is unfair to deny that the modern Thoroughbred may owe a portion of his excellence to the mares which were crossed with the trio referred to. It is not, however, necessary to enter into a detailed history of the Turf, which in some form or other flourished in England at an extremely remote period; but it is desirable that some of the efforts made by English sovereigns to improve the native breed should not be lost sight of. King John, for instance, was a firm believer in the efficacy of Eastern blood, and devoted a great deal of attention to his stud at Eltham, a locality which up to now has been intimately associated with the development of the race-horse. The fortunes of this class of animal, however, appear to have fluctuated somewhat until the time of King Henry VIII, who certainly did more for British horse-flesh than any monarch who had preceded him. It was during his reign that the blood of the high-class English horses, which had got into the hands of foreigners during the Wars of the Roses, was reintroduced into this country, and he restored the glories of the Eltham stud, besides founding similar establishments at Windsor and Hampton Court. It is evident, moreover, that King Henry, like King John, was a believer in Eastern blood, his master of the stud being called the Keeper of the Barbary Horses, which he crossed with those he received from the Marquis of Mantua, who had benefited by the wars alluded to above to the extent of becoming the owner of some of the finest English horses living, for one of which he is reputed to have declined an offer of its weight in silver. Queen Elizabeth undoubtedly inherited her sire's regard for horse-flesh, as she had studs at Greenwich, Hampton Court, Windsor, St. Albans, and Waltham; but it was not until the reign of King James I that racing became recognized as a great sport in England, though across the border in Scotland it was established as a national institution earlier, and in fact Queen Elizabeth had presented the sport-loving King James with some race-horses long before he succeeded to the throne of this country. King James does not appear to have been at all disposed to rest contented with the quality of his race-horses, as he purchased the so-called Markham Arabian at a price which is variously estimated at £500 and £200, but the transaction apparently turned out unprofitable, as the horse ran badly and there are no records of any good stock being left behind by him. A great acquisition was, however, secured in the reign of King Charles I by the Duke of Buckingham, who purchased

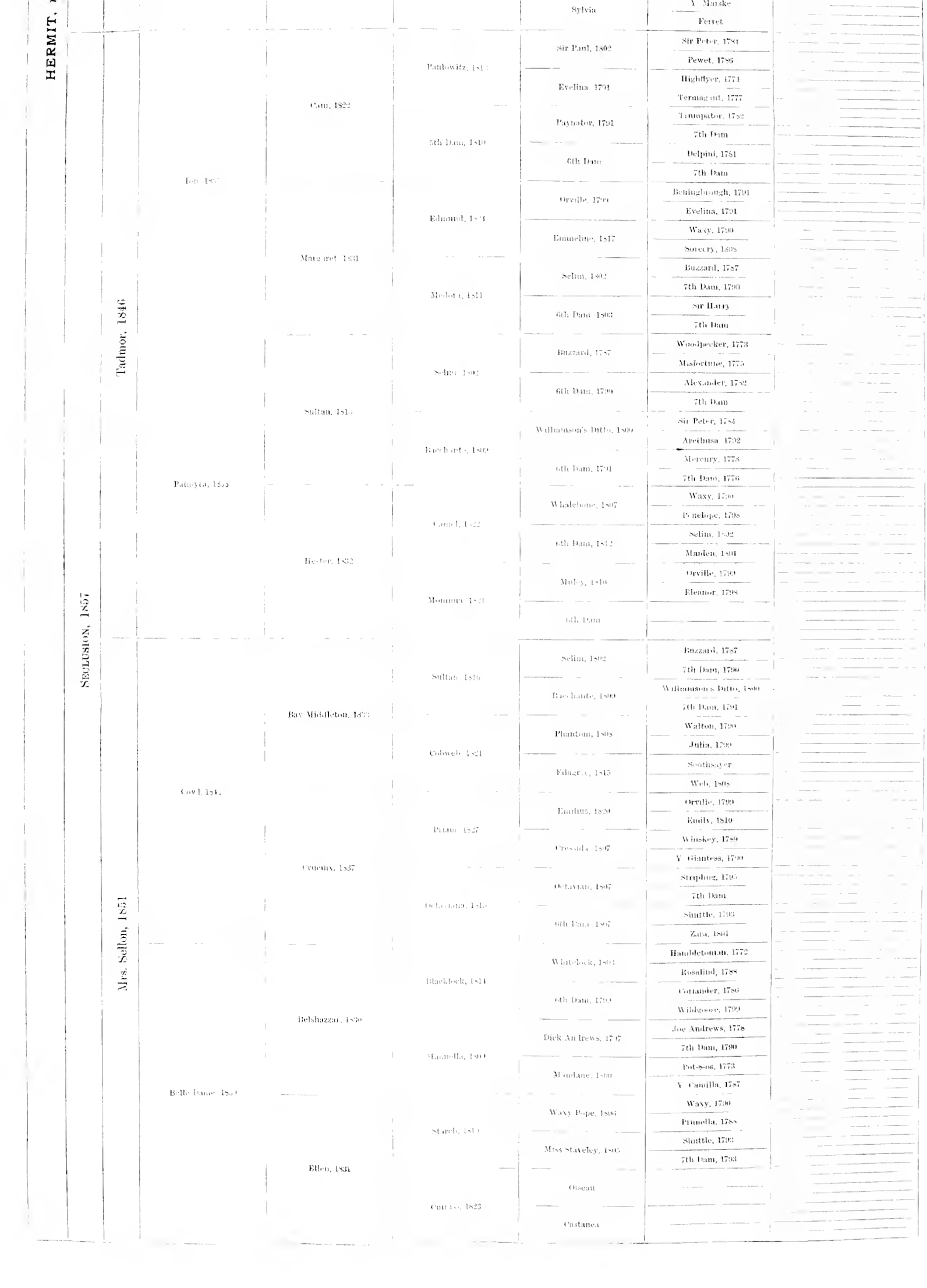
HERMIT

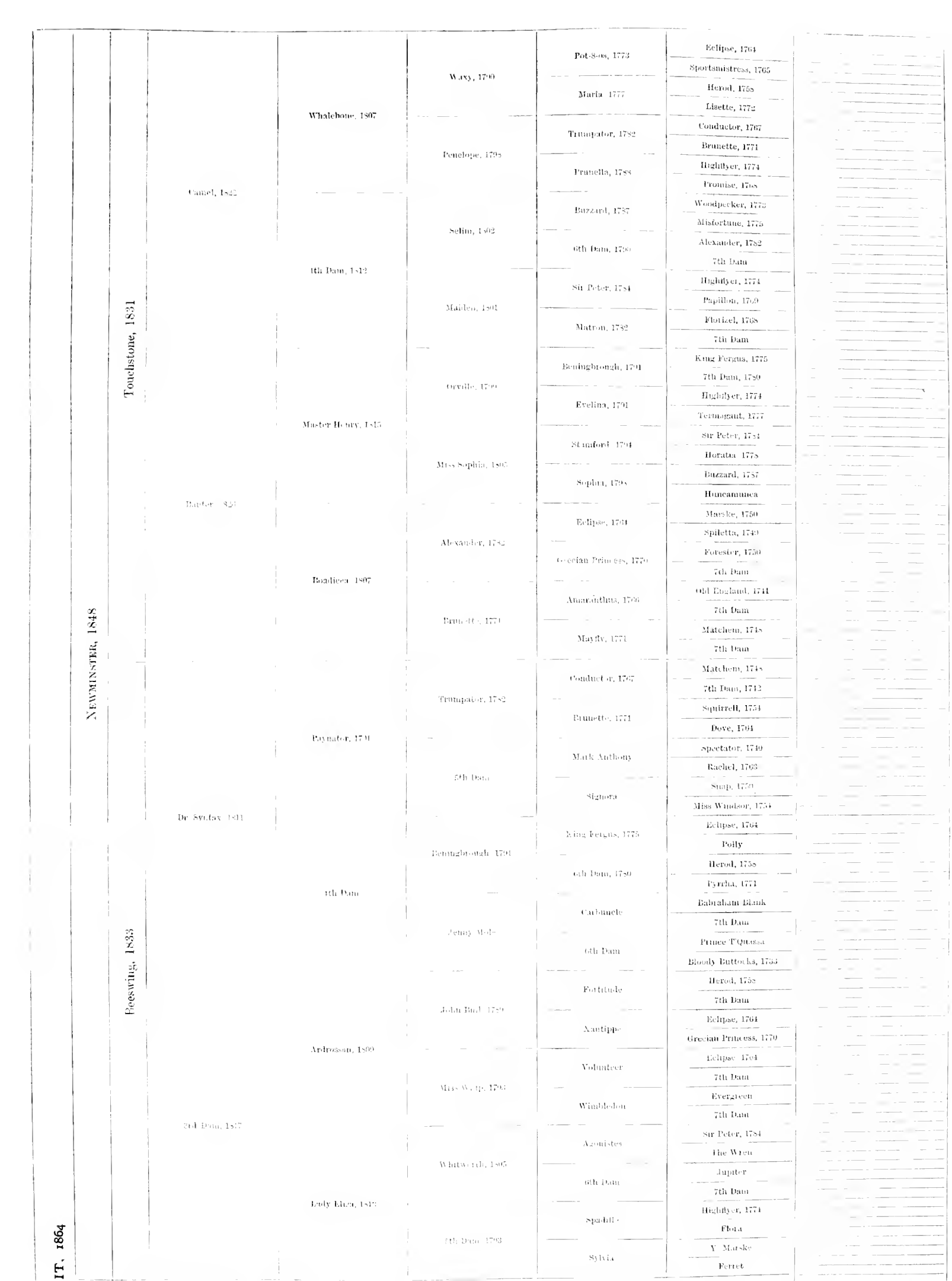
A dark-chestnut horse by Newminster out of Seclusion. He was bred by Mr. Blenkiron in 1864, and in the following year was purchased by Mr. Chaplin at the Middle Park sale for 1000 guineas. As a two-year-old he showed excellent form, winning the Biennial at Bath, the Biennial at Ascot, and the Biennial and Troy Stakes at Stockbridge. As a three-year-old he won four races out of nine, including the Derby Stakes at Epsom, beating Marksman, Vauban, and twenty-seven others. In 1870 he was put to the stud at Blankney, where he remained until April, 1890, when he died, and his skeleton is now set up in the museum of the Royal Veterinary College, London. His fee in 1870 was 20 guineas and 10*s.* 6*d.* to the groom, but his great success at the stud ultimately brought it up to 250. "After Stockwell," says Mr. Joseph Osborne, "he was the most successful sire of modern times."

He got two Derby winners, viz. Shotover and St. Blaise, beside many other good horses, among which may be mentioned St. Agatha, Trappist, Holy Friar, Lancaster, Industry, Charon, Monachus, Ambergus, Devotee, L'Eclair, Rylestone, Out of Bounds, Zealot, Peter, The Abbot, St. Hilda, St. Louis, Angelina, Thebais, Tristan, Shotover, St. Blaise, Wandering Min, Queen Adelaide, Lonely, Timothy, Friar's Balsam, and others.

Before he died in 1890 his progeny had won over £340,000, which has since been considerably added to.

As a race-horse and a sire, Mr. Chaplin declared Hermit to be the "best friend he ever had".


HERMIT, 1
SECLUSION, 1857
Tadmor, 1846
Mrs. Sellon, 1851
Sylvia
Y. Mauske
Ferret
Sir Paul, 1802
Sir Peter, 1784
Pewet, 1786
Evelina 1791
Highflyer, 1774
Termagant, 1777
Paynator, 1791
Trumpator, 1752
7th Dam
6th Dam
Delpini, 1781
7th Dam
Orville, 1791
Beningbrough, 1791
Evelina, 1791
Emmeline, 1817
Waxy, 1790
Sorcery, 1808
Selim, 1802
Buzzard, 1787
7th Dam, 1790
6th Dam 1803
Sir Harry
7th Dam
Buzzard, 1787
Woodpecker, 1773
Misfortune, 1775
6th Dam, 1790
Alexander, 1782
7th Dam
Williamson's Ditto, 1800
Sir Peter, 1784
Arethusa 1792
6th Dam, 1791
Mercury, 1778
7th Dam, 1776
Whalebone, 1807
Waxy, 1790
Penelope, 1798
6th Dam, 1812
Selim, 1792
Maiden, 1801
Mulley, 1810
Orville, 1789
Eleanor, 1798
6th Dam
Selim, 1802
Buzzard, 1787
7th Dam, 1790
Bachante, 1809
Williamson's Ditto, 1800
7th Dam, 1791
Phantom, 1805
Walton, 1790
Julia, 1799
Soothsayer
Web, 1805
Orville, 1789
Emily, 1810
Whiskey, 1789
Y. Giantess, 1790
Stripling, 1795
7th Dam
Shuttle, 1793
Zara, 1801
Whitelock, 1801
Haubletonian, 1772
Rosalind, 1788
Commander, 1786
6th Dam, 1799
Wildgoose, 1799
Dick Andrews, 1797
Joe Andrews, 1776
7th Dam, 1790
Mundane, 1800
Pot-8-os, 1773
Y. Camilla, 1787
Waxy Pope, 1806
Waxy, 1790
Prunella, 1788
Miss Staveley, 1805
Shuttle, 1793
7th Dam, 1793
Oiseau
Castanea
Sultan, 1816
Selim, 1802
Buccaneer, 1809
Patroyia, 1855
Cowl, 1854
Bay Middleton, 1877
Belshazzar, 1850
Belle Dame 1850
Ellen, 1835
Cain, 1822
5th Dam, 1810
Edmund, 1834
Margaret 1831
Mollett, 1811
Pantowitz, 1843
Hector, 1832
Monmire, 1841
Sultan, 1816
Cobweb, 1821
Priam, 1827
Crucifix, 1837
Blackbock, 1844
Sterch, 1845
Curtis, 1823


Newminster, 1848
Touchstone, 1831
Beeswing, 1833
Whalebone, 1807
Camel, 1842
Waxy, 1799
Penelope, 1795
Selim, 1802
4th Dam, 1812
Maiden, 1801
Orville, 1799
Master Henry, 1815
Miss Sophia, 1805
Banker, 1821
Alexander, 1782
Boadicea 1807
Bruneth, 1771
Baynator, 1791
Dr Syntax, 1811
Trumpator, 1782
5th Dam
Bennington 1791
4th Dam
Jenny Mole
John Bull, 1779
Androsson, 1809
Miss Wade, 1793
2nd Dam, 1817
Whitworth, 1805
Lady Elsie, 1817
5th Dam, 1793
Pot-8-os, 1773
Maria 1777
Trumpator, 1782
Prunella, 1788
Buzzard, 1787
6th Dam, 1790
Sir Peter, 1784
Matron, 1782
Beningbrough, 1791
Evelina, 1791
Stamford 1794
Sophia, 1795
Eclipse, 1764
Grecian Princess, 1770
Amaranthus, 1790
Mayfly, 1771
Conductor, 1767
Brunette, 1771
Mark Anthony
Signora
King Fergus, 1775
6th Dam, 1780
Carbuncle
6th Dam
Fortitude
Xantippe
Volunteer
Wimbledon
Azomistes
6th Dam
Spadille
Sylvia
Eclipse, 1764
Sportsmistress, 1765
Herod, 1758
Lisette, 1772
Conductor, 1767
Brunette, 1771
Highflyer, 1774
Promise, 1765
Woodpecker, 1772
Misfortune, 1775
Alexander, 1782
7th Dam
Highflyer, 1774
Papillon, 1760
Flotizel, 1768
7th Dam
King Fergus, 1775
7th Dam, 1780
Highflyer, 1774
Termagant, 1777
Sir Peter, 1784
Horatia 1775
Buzzard, 1787
Huncamunca
Marske, 1750
Spiletta, 1749
Forester, 1750
7th Dam
Old England, 1741
7th Dam
Matchem, 1748
7th Dam
Matchem, 1748
7th Dam, 1742
Squirrell, 1754
Dove, 1764
spectator, 1749
Rachel, 1763
Sump, 1750
Miss Windsor, 1754
Eclipse, 1764
Polly
Herod, 1758
Fyrcha, 1771
Babraham Blank
7th Dam
Prince T'Quassa
Bloody Buttocks, 1753
Herod, 1758
7th Dam
Eclipse, 1764
Grecian Princess, 1770
Eclipse 1764
7th Dam
Evergreen
7th Dam
Sir Peter, 1784
Hie Wren
Jupiter
7th Dam
Highflyer, 1774
Flora
Y. Marske
Ferret

IT, 1864

ORME, 18

ANGELICA, 1879

Galopin, 1872

Vedette, 1854

Voltigeur, 1847

Voltaire, 1826

Blacklock, 1814

Whitelock, 1803

7th Dam, 1799

6th Dam, 1816

Phantom, 1808

7th Dam, 1802

Martha Lynn, 1837

Mulatto, 1827

Catton, 1809

Desdemona, 1811

Lola, 1824

Filho-da-Puta, 1812

Treasure

Mrs Ridgway, 1847

Birdcatcher, 1833

Sir Hercules, 1826

Whalebone, 1807

Peri, 1822

Guiccioli, 1823

Bob Booty, 1804

Flight, 1809

Nan Darrell, 1840

Inheritor, 1831

Lottery, 1822

Handmaiden, 1817

Nell, 1831

Blacklock, 1814

Madame Vestris

Flying Duchess, 1853

The Flying Dutchman, 1846

Bay Middleton, 1853

Sultan, 1816

Selim, 1802

Bacchante, 1809

Cobweb, 1821

Phantom, 1808

Filagree, 1815

Barbelle, 1836

Sandbeck, 1818

Catton, 1809

Orvillina

Daridotta, 1822

Amadis

Selima, 1799

Merope, 1841

Voltaire, 1826

Blacklock, 1811

Whitelock, 1803

7th Dam, 1799

6th Dam, 1816

Phantom, 1808

7th Dam, 1802

5th Dam, 1817

Juniper, 1805

Whisky, 1789

Jenny Spinner

6th Dam, 1810

Sorcerer, 1796

Virgin

St. Angela, 1865

King Tom, 1851

Harkaway, 1834

Economist, 1825

Whisker, 1812

Waxy, 1790

Penelope, 1795

Florantlie, 1818

Octavian, 1807

Caprice, 1797

Nabocklish, 1819

Rugantino, 1803

Fanny Dawson, 1827

Butterfly

Miss Tooley, 1808

Teddy the Grinder, 1798

Lady Jane, 1796

Pocahontas, 1857

Glencoe, 1833

Sultan, 1816

Selim, 1802

Bacchante, 1809

Trampoline, 1825

Tramp, 1810

Web, 1808

Marpessa, 1830

Moley, 1810

Orville, 1799

Eleanor, 1798

Clare, 1821

Marmion, 1806

Harpalice, 1814

Adeline, 1851

Ion 1853

Cain, 1822

Paulowitz, 1813

Sir Paul, 1802

Evelina, 1791

6th Dam, 1810

Paynator, 1791

7th Dam

Edmund 1824

Orville, 1799

Emmeline, 1817

Margaret, 1831

Medora, 1811

Selim, 1802

7th Dam, 1803

Little Fairy, 1832

Hornsea

Velocipede, 1825

Blacklock, 1814

7th Dam, 1817

Miss Cranfield

Sir Peter, 1784

7th Dam

Zodiac, 1801

St George

Abigail

Lacerta, 1816

Jerboa, 1803

Gohanna, 1790

Camilla

ORMONDE, 1884

Bend Or, 1878

Doncaster, 1870

Stockwell, 1849

The Baron, 1842

Birdcatcher, 1833

Sir Hercules, 1826

Guiccioli, 1823

Economist, 1825

Miss Pratt, 1825

Sultan, 1816

Trampoline, 1825

Echidna, 1838

Glencoe, 1832

Pocahontas, 1857

Marpessa, 1830

Muley, 1810

Clare, 1824

Orlando, 1841

Touchstone, 1831

Vulture, 1833

Teddington, 1845

Miss Twickenham, 1838

Rockingham, 1830

Electress, 1819

Marigold, 1860

Ratan, 1841

Buzzard, 1787

7th Dam

5th Dam, 1852

6th Dam, 1844

Melbourne, 1834

Lizbeth

Rouge Rose, 1865

Thormanby, 1857

Windhound, 1847

Pantaloon, 1824

Castrel, 1801

Idalia, 1815

Phryne, 1840

Touchstone, 1831

Decoy, 1830

Alice Hawthorne, 1848

Muley Moloch, 1830

Muley, 1810

Nancy, 1813

Rebecca, 1831

Lottery, 1820

7th Dam, 1818

Sandbeck, 1815

Catton, 1809

Orvillina

Redshank, 1833

Johanna, 1813

Selim, 1802

7th Dam

Ellen Horn, 1844

Plenipotentiary, 1831

Emilius, 1820

Hactiet, 1819

Delhi, 1832

Pawn Junior, 1817

Waxy, 1790

Pawn

Lily Agnes, 1871

Macaroni, 1860

Sweetmeat, 1842

Gladiator, 1833

Partisan, 1811

Walton, 1799

Parasol, 1809

Pauline, 1826

Mosca, 1819

Quadrille, 1815

Lollypop, 1836

Voltaire, 1826

Blacklock, 1814

7th Dam, 1816

Behnda, 1825

Blacklock, 1814

Wagtail, 1818

Buzzard, 1787

Jocose, 1843

Castrel, 1801

7th Dam, 1799

Pantaloon, 1824

Peruvian, 1806

Idalia, 1815

Musidora, 1804

Orville, 1799

Master Henry, 1815

Miss Sophia, 1805

Banter, 1826

Alexander, 1782

Boadicea, 1807

Brunette, 1771

Polly Agnes, 1865

The Cure, 1841

Physician, 1829

Brutandorf, 1821

Blacklock, 1814

Mandane, 1809

Princette, 1820

Prime Minister, 1810

Miss Paul, 1811

Morsel, 1836

Mulatto, 1823

Catton, 1809

Desdemona, 1811

Linda, 1825

Waterloo, 1814

Cressida, 1807

Sir Hercules, 1826

Whalebone, 1807

Miss Agnes, 1850

Birdcatcher, 1833

Peri, 1822

Guiccioli, 1823

Bob Booty, 1804

Flight, 1809

Clarion, 1836

Sultan, 1816

Clara

Agnes, 1844

Annette, 1835

Priam, 1827

Emily, 1810

E, 1889

ORME

Orme is a bay horse with a star on his forehead, but in other respects free from white. He was bred in 1889 by His Grace the late Duke of Westminster, in whose hands he continued to remain, and is still located at Eaton. He is by Ormonde, out of Angelica, by Galopin, and stands fully 16 hands high.

As a race-horse he stood far out and away from his compeers, and was decidedly one of the best of his time. He commenced his racing career as a two-year-old by placing to his credit the Richmond Stakes, followed by the Prince of Wales' Stake, value £2800. At Newmarket first October Meeting he won the Middle Park Plate, value £2505, when he carried 9 sts. 3 lbs. At the Houghton Meeting he won the Dewhurst Plate and the Home-Bred Post Foal Stakes.

In 1892 he was unable to compete for the Two Thousand Guineas and the Derby owing to an illness which it was alleged had resulted from the effects of poison secretly administered to him by some unknown person. As a three-year-old he won the Eclipse Stakes, value 9105 sovereigns, and the Sussex Stakes at Goodwood. At Newmarket he won the Great Foal Stakes, the Champagne Stakes, the Limekiln Stakes, and the Subscription Stakes. As a four-year-old he won the Rous Memorial Stakes at Ascot, and for a second time the Eclipse Stakes at Sandown Park, value 9902 sovereigns. At Goodwood he won the Gordon Stakes, and wound up a splendid racing career by running Childwick to three-quarters of a length in the Limekiln Stakes, when giving him 2 sts. 5 lbs.

At the stud he got that brilliant race-horse Flying Fox, who, after winning the Derby, St. Leger, Two Thousand Guineas, Eclipse Stakes, and other races, was sold at the sale of the late Duke of Westminster to M. Edmond Blanc for the record price of 37,500 guineas.

Six yearlings by him disposed of at the Eaton Sale averaged 3878 guineas. He is also the sire of Duke of Westminster, Orchid, Flying Lemur, Manchuria, Missel Thrush, and Ormenus.

Ellen Worn 1914

7th Dam

the Helmsley Turk, which sired a number of valuable animals. The advent of the Commonwealth, and the wars which preceded it, played havoc with the operations of horse-breeders in all directions. However, with the Restoration, King Charles II devoted some attention to the improvement of the equine race, and imported a number of mares (these may be taken to have possessed Eastern blood), which were called "Royal Mares", and also a few stallions, all of which, however, became distributed when the king died. His successor did not interest himself in horse-flesh, but in the reign of William and Mary a good many valuable Eastern horses were imported by the crown. Moreover, during the period in which King William and Queen Mary occupied the throne, one of the illustrious trio of stallions, to which the modern Thoroughbred owes much of his excellence, appeared upon the scene, this being the Byerley Turk, the charger of Captain Byerley during the campaign in Ireland, and the horse which subsequently became one of the pillars of the *Stud-book*.

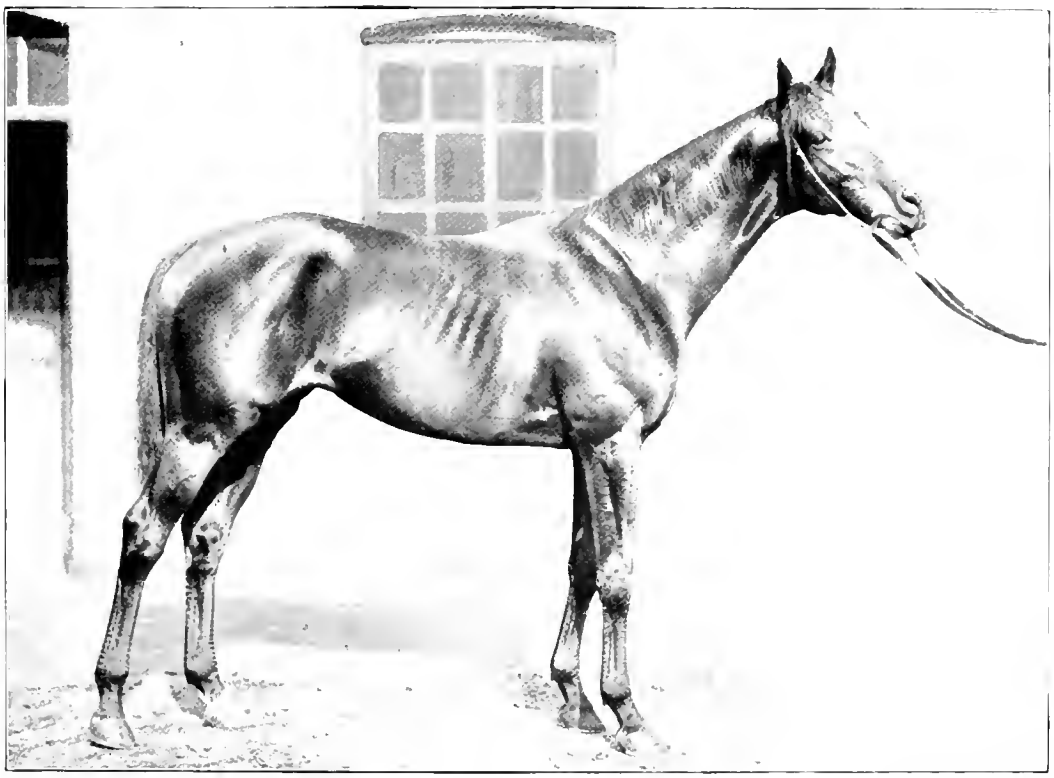
Queen Anne was indisputably a racing monarch, and very soon after she ascended the throne the Darley Arabian, the sire of Flying Childers, became known. This horse, the second of the three great sires which served the Thoroughbred so well, was presented to Mr. Darley of Buttercomb, York, by his brother, and his fame at the stud surpassed even that of the Leedes Arabian, the sire of Betty Leedes, the dam of the Flying Childers, great horse though the Leedes Arabian was. Altogether no fewer than twenty-three stallions of Eastern blood came into this country during the reign of good Queen Anne, and from her period the breeding of the Thoroughbred appears to have become conducted upon more scientific principles than formerly. The last of the great trio of stallions to which reference has just been made as being pillars of the Stud-book, was the Godolphin Arabian, a dark bay horse, 15 hands, with his off-hind heel white. This animal was found in a water-cart in Paris in the year 1728, and was imported into this country, where he lived until 1753, his death being universally lamented, and by none more than by his favourite cat, which followed him to his grave, sat disconsolately upon his remains as the preparations were made for lowering him into it, and then disappeared mysteriously never to be seen again. At least so the story goes. King George I and his successor displayed no interest in the development of the Thoroughbred; but the latter's son, the Duke of Cumberland, effected much. He founded Ascot races, and got together a stud at Cumberland, and another at the Isle of Dogs, where some say the great Eclipse was foaled, though doubts are expressed in other quarters regarding the accuracy of this contention. Since the time of the Duke of Cumberland, the history of the Thoroughbred horse is clearly traceable

in the Stud-book, and consequently it is unnecessary to particularize further on that portion of the subject. At the same time the varying conditions which regulate the production of this class of horse are worthy of comment, for the methods pursued by breeders have greatly altered, and some persons think for the worse. In the old days people raised their Thoroughbreds with the view of running them themselves, such functions as public sales of yearlings being unknown and unheard of. Consequently the unfortunate practice now so prevalent of stall-feeding young stock, and in fact treating them as though they were prize bullocks, had no existence then. Each breeder acted independently according to his own ideas of what was desirable for the benefit of his stock, and not with the fear of adverse criticism upon the condition and precociousness of his yearlings. The value of their horses was consequently for the most part estimated by the test of future events, or by their breeding and the performances of their relatives, rather than by the amount of blubber they carried upon their frames, or the height to which their stature had been forced by a system of artificial rearing, which naturally must affect their constitutions and hardiness to a greater or less extent —probably to a greater.

It is, of course, but natural that certain families of Thoroughbreds require different treatment from others, not only in their rearing, but subsequently in the course of their preparation for the engagements they are destined to fulfil, and possibly no greater illustration of this can be produced than the case of the Newminsters, which usually run best after a tender preparation, Hermit, the Derby winner of 1867, being perhaps the most notable instance of this. At the same time, it cannot be reasonably doubted that the youngsters which enjoy a long freedom in a roomy paddock are more likely to develop into sound-constitutioned animals than those which have been pampered and artificially forced from the earliest moment. It must, however, be always remembered that allowances should be made for the conditions under which young horses have to be reared, as very much indeed will depend upon the nature of climate and soil. Foals bred in damp places, and exposed to much rain and cold wind, or running on clay soils, are sadly handicapped in their growth and progress; whereas the more fortunate youngsters which are favoured by a more genial climate, and possess the advantage of having a large undulating area to roam about in, have every advantage placed in their way. The desirability of the paddocks being situated upon undulating ground consists in the facilities it affords the colts and fillies for utilizing all their muscles from an early age; whereas if the land is flat, each set of muscles will not be equally brought into play. Indeed

BAY FILLY, SCEPTRE

By Persimmon, out of Ornament by Bend Or, out of Lily Agnes — Winner of the St. Leger, 1902, &c. &c.
The Property of W. A. H. Bass, Esq.



BAY HORSE, FLYING FOX

By Orme, dam, Vampire by Galopin, out of Irony — Winner of the Derby and St. Leger, &c. &c.
and sold as a four year-old at the Duke of Westminster's sale for 37,500 guineas to M. Edmond Blanc

nothing should be neglected that conduces to soundness in the Thoroughbred, this being for obvious reasons the great object of all breeders, though it must be admitted that a large majority of them do not appear to be acting up to their convictions when they are guilty of such an act of foolishness as to treat their young stock as though they were hothouse plants.

The Hackney.—The remarkable advance in popularity that has been made by the Hackney horse during the past twenty years is due not only to the exertions of the members of the society that exists to support his interests, but to the natural attractions possessed by the breed, and the change that has undoubtedly come over the feelings of those who keep horses for pleasure. In fact, there is a fashion in horse-flesh as in everything else, whilst the caprice of owners is also regulated by extraneous influences which materially affect the position of many a variety of horse. For instance, in times of prosperity and plenty the head of the establishment is not so much disposed to curtail his stable expenses as he is during a period of agricultural or mercantile depression. When trade is bad no extravagances can be allowed, and the all-round horse is regarded as a necessity, whereas before, one animal or more could be kept for harness, and others for saddle purposes, without materially affecting their owner's balance at the bank.

In order, however, to arrive at a proper understanding as to what a Hackney really is, it will perhaps be as well to consider the original uses to which the breed was put, and then to draw attention to the origin of the horse,—an arrangement which, though it may be regarded as somewhat transforming the conventional lines, may be accepted as desirable for various reasons.

It was in the ante-railway days that the Hackney was regarded as the most valuable of breeds, his particular mission in life being the carrying of East Anglian and Yorkshire farmers from their holdings to the markets, distant in many instances a good number of miles. Consequently at the commencement of the nineteenth century, and also for some years before and a good number subsequently, the Hackney was regarded in the light of the farmer's nag, which could be relied upon to convey his master (occasionally his mistress as well, for sometimes the farmer's wife would accompany her spouse, riding behind him on a pillion) to market and bring him safely back, whilst the intervening days could be devoted to such light jobs as are usually allotted to the old horse on a farm. This being the position of the Hackney, it can scarcely be a subject of surprise to anybody that the variety was highly esteemed in the old days. Neither can it be regarded as remarkable that when railways became established, many

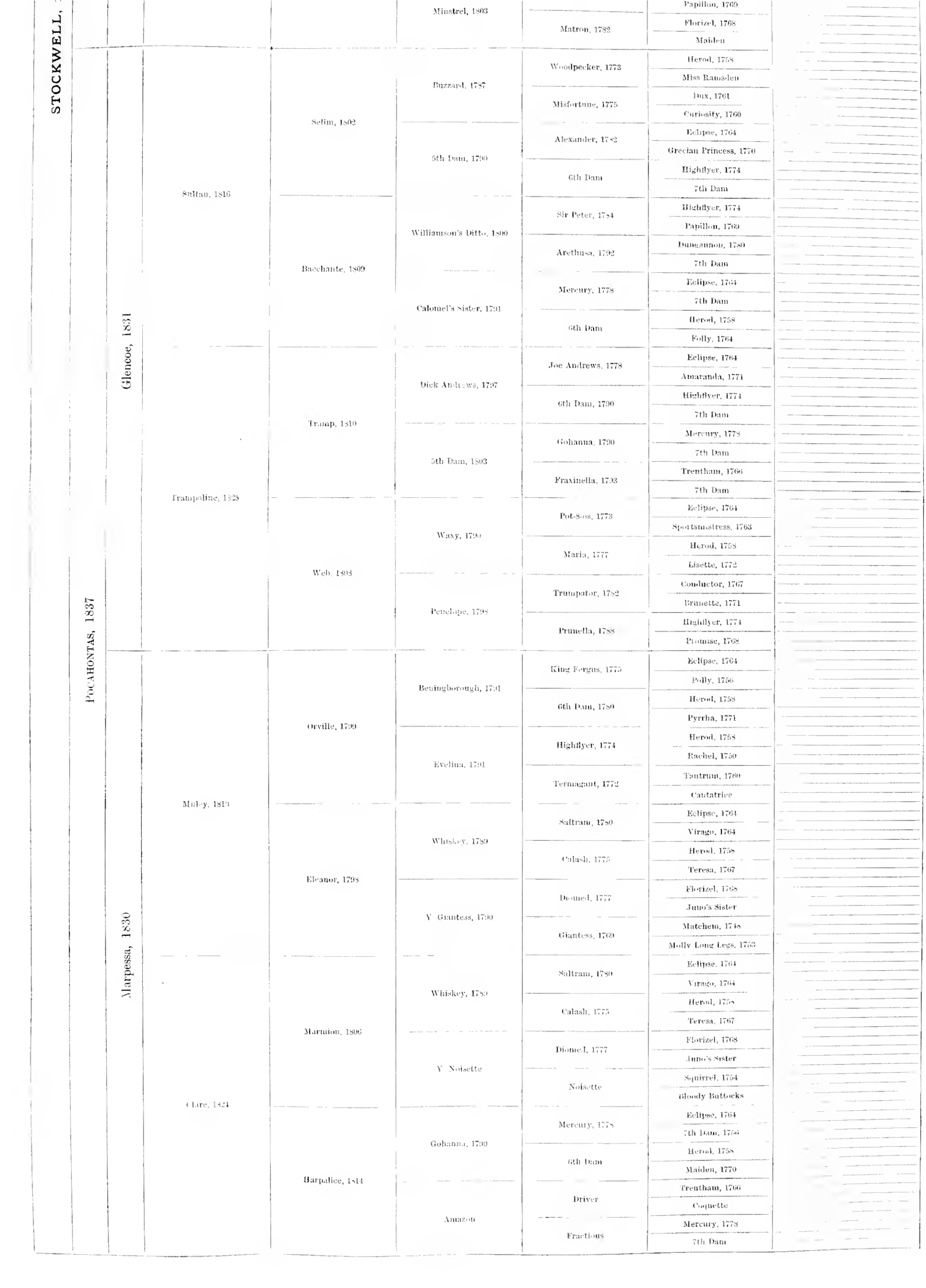
agriculturalists who adopted them as means of locomotion became lukewarm in their support of the breed that had served them faithfully for many years. Their neglect of the Hackney perhaps was only natural, for the horse was too light for farm-work, and the old-day farmer was not the sort of man to continue breeding an animal for which he had reduced uses, and for which he did not prophesy a large popular demand. The result was the partial decadence of the breed, which might possibly have become entirely extinct were it not for the loyalty and devotion to it evinced in a most practical form by a few old admirers, who stood by it during the period of its adversity, and who are now reaping a rich reward for their constancy to the horse.

Unquestionably, however, the rescue of the Hackney from ultimate extinction—for the old breeders and their descendants who had held on to the blood were getting fewer and farther between—is due to the action of the members of the Hackney Horse Society, who for the past few years have laboured with the object before them of bringing the great merits of this class of horse before the public, with results that must have exceeded by far the most sanguine anticipations of the originators of the movement. At the same time it may be mentioned, as a further proof of the value of their efforts, that the gentlemen who were spending their time and their money in furthering a very patriotic movement had to encounter one or two unforeseen difficulties, the defeat of which has undoubtedly rendered the success that has attended their labours still more remarkable. The chief obstacle which they had to overcome was the erroneous statements that were made to the effect that the Hackney was not a distinct variety, and consequently could not be expected to breed true; whilst even the institution of a Stud-book was received with expressions of hostile criticism in certain quarters.

There can, however, be no doubt whatever that many a Hackney pedigree is as long and as clear as the most fastidious breeder could desire, for most of the stanchest supporters of the variety were as careful as any breeder of the Thoroughbred horse in preserving accurate records of their studs, and so far as the writer can see, there is no legitimate ground for stigmatizing these men either as rogues or fools, one of which they must have been if they had manufactured pedigrees, or been deceived themselves concerning the breeding of their horses. True it is, of course, that until a few years ago the Hackney had remained unhonoured by a stud-book; but all such volumes are at first necessarily things of threads and patches, being manufactured from information afforded their compilers by breeders, and surely therefore statements, substantiated as they are by documentary evidence which has been handed down from father to son for generations

STOCKWELL

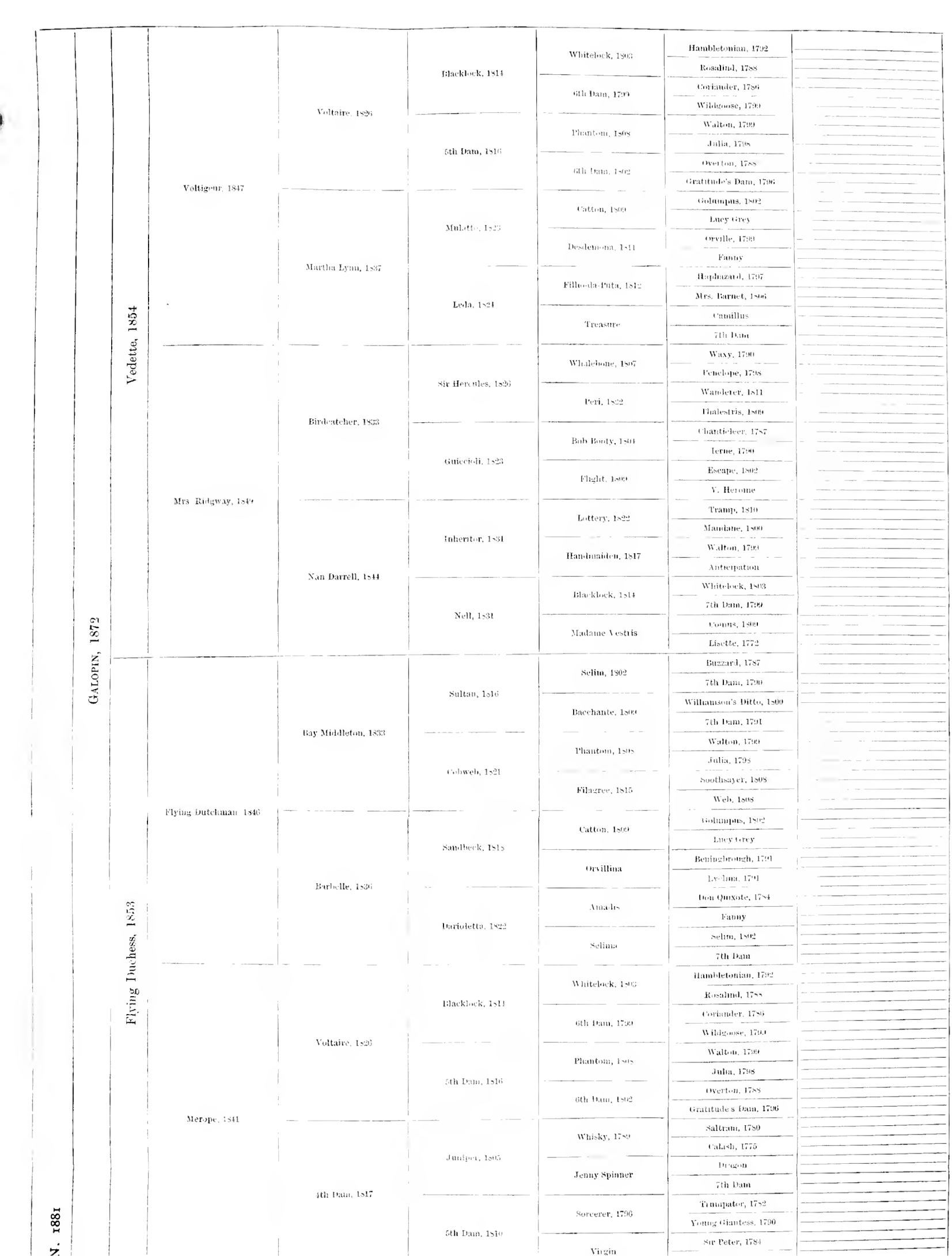
Stockwell was a chestnut horse with two white hind-legs and a white blaze down the face. He was bred in 1849 by Mr. Theobald, and sold to Lord Exeter for £180, and 500 more if he won the Derby. He was one of the best race-horses of his day, and subsequently became one of the first sires of the century. He was by The Baron out of Pocahontas, who was also the dam of Rataplan, King Tam, Knight of St. Patrick, &c. &c. During his turf career he accounted for a number of races. Besides the Two Thousand and St. Leger, he also won the Newmarket Stakes at Goodwood, a sweep-stake of £400, and the racing stakes £600; at York, the Great Yorkshire Stakes of 1590 sovereigns; at Newmarket he won the Grand Duke Michael Stakes, the Newmarket St. Leger, and the Whip; after which he went to the stud, where he begot a peerless family. Among his sons were Belladrum, Blair Athol, Lord Lyon, Uncas, Doncaster, St. Albans, The Marquis, and numerous other good ones; while his daughters included Isola Bella, the dam of Isonomy; Stockings, the dam of Mowerina; Sandal, the grandam of Sainfoin; Woodbine, the grandam of St. Serf; Caller Ou, Achievement, and many others of the highest distinction. He died at Hooton Hall, Cheshire, on the 5th of May, 1870, when 21 years old.


STOCKWELL, 1841
POCAHONTAS, 1837
Glencoe, 1831
Marpessa, 1830
Sultan, 1816
Trampoline, 1825
Muley, 1819
Clare, 1824
Selim, 1802
Buccaneer, 1809
Trump, 1810
Web, 1803
Orville, 1799
Eleanor, 1798
Marmion, 1806
Harpalice, 1814
Minstrel, 1803
Buzzard, 1787
5th Dam, 1780
Williamson's Ditto, 1800
Calonel's Sister, 1791
Dick Andrews, 1797
5th Dam, 1803
Waxy, 1790
Penelope, 1798
Benningborough, 1791
Evelina, 1791
Whiskey, 1789
Y. Giantess, 1790
Whiskey, 1780
Y. Noisette
Gohanna, 1790
Amazon
Matron, 1782
Woodpecker, 1773
Misfortune, 1775
Alexander, 1782
6th Dam
Sir Peter, 1784
Arethusa, 1792
Mercury, 1778
6th Dam
Joe Andrews, 1778
6th Dam, 1790
Gohanna, 1790
Fraxinella, 1793
Pot-8-os, 1773
Maria, 1777
Trumpator, 1782
Prunella, 1788
King Fergus, 1775
6th Dam, 1789
Highflyer, 1774
Termagant, 1772
Saltram, 1780
Calash, 1775
Diomed, 1777
Giantess, 1769
Saltram, 1780
Calash, 1775
Diomed, 1777
Noisette
Mercury, 1778
6th Dam
Driver
Fractious
Papillon, 1769
Florizel, 1768
Maiden
Herod, 1758
Miss Ramsden
Dux, 1761
Curiosity, 1760
Eclipse, 1764
Grecian Princess, 1770
Highflyer, 1774
7th Dam
Highflyer, 1774
Papillon, 1769
Dungannon, 1780
7th Dam
Eclipse, 1764
7th Dam
Herod, 1758
Folly, 1764
Eclipse, 1764
Amaranda, 1774
Highflyer, 1774
7th Dam
Mercury, 1778
7th Dam
Trentham, 1766
7th Dam
Eclipse, 1764
Sportsmistress, 1763
Herod, 1758
Lisette, 1772
Conductor, 1767
Brunette, 1771
Highflyer, 1774
Promise, 1768
Eclipse, 1764
Polly, 1756
Herod, 1758
Pyrrha, 1771
Herod, 1758
Rachel, 1750
Tantrum, 1760
Cantatrice
Eclipse, 1764
Virago, 1764
Herod, 1758
Teresa, 1767
Florizel, 1768
Juno's Sister
Matchem, 1748
Molly Long Legs, 1753
Eclipse, 1764
Virago, 1764
Herod, 1758
Teresa, 1767
Florizel, 1768
Juno's Sister
Squirrel, 1764
Bloody Buttocks
Eclipse, 1764
7th Dam, 1756
Herod, 1758
Maiden, 1770
Trentham, 1766
Coquette
Mercury, 1778
7th Dam

Tell, 1849	The Baron, 1842	Birdcatcher, 1833	Sir Hercules, 1826	Whalebone, 1807	Waxy, 1790	Pot-8-os, 1773	Eclipse, 1764
							Sportsmistress, 1763
						Maria, 1777	Herod, 1758
							Lisette, 1772
					Penelope, 1795	Trumpator, 1782	Conductor, 1767
							Brunette, 1771
						Prunella, 1788	Highflyer, 1774
							Promise, 1768
				Peri, 1822	Wanderer, 1790	Gohanna, 1790	Mercury, 1778
							7th Dam, 1779
						Catherine, 1795	Woodpecker, 1773
							Camilla
					Thalestris 1809	Alexander, 1782	Eclipse, 1764
							Grecian Princess, 1770
						Rival, 1800	Sir Peter, 1784
							Hornet
			Guiccioli, 1823	Bob Booty, 1804	Chanticleer, 1787	Woodpecker, 1773	Herod, 1758
							Miss Ramsden
						6th Dam, 1778	Eclipse, 1764
							Rosebud, 1765
					Ierne, 1790	Bagot, 1780	Herod, 1758
							Marotte, 1766
						6th Dam	Gamahoe
							Patty
				Flight, 1809	Escape, 1802	Commodore, 1795	Tom Tug, 1777
							Smallhopes
						6th Dam, 1791	Highflyer, 1774
							Shift
					Y. Heroine	Bagot, 1780	Herod, 1758
							Marotte, 1766
						Old Heroine	Hero, 1753
							7th Dam
		Echidna, 1838	Economist 1825	Whisker, 1812	Waxy, 1790	Pot-8-os, 1773	Eclipse, 1764
							Sportsmistress, 1763
						Maria, 1777	Herod, 1758
							Lisette, 1772
					Penelope, 1795	Trumpator, 1782	Conductor, 1767
							Brunette, 1771
						Prunella, 1788	Highflyer, 1774
							Promise, 1768
				Floranthe, 1818	Octavian, 1807	Stripling, 1795	Phenomenon, 1780
							Laura
						6th Dam	Oberon
							7th Dam
					Caprice, 1797	Anvil, 1777	Herod, 1758
							7th Dam
						Madcap, 1774	Eclipse, 1764
							7th Dam
			Miss Pratt, 1825	Blacklock, 1814	Whitelock, 1806	Hambletonian, 1792	King Fergus, 1775
							7th Dam, 1782
						Rosalind, 1788	Phenomenon, 1780
							Atalanta, 1769
					5th Dam 1799	Coriander, 1786	Pot-8-os, 1773
							Lavender, 1778
						Wildgoose, 1792	Highflyer, 1774
							Coheiress, 1786
				Gadabout, 1812	Orville, 1799	Beningbrough, 1791	King Fergus, 1775
							7th Dam, 1780
						Evelina, 1791	Highflyer, 1774
							Termagant, 1772
					Minstrel, 1803	Sir Peter, 1784	Highflyer, 1774
							Papillon, 1769
						Matron, 1782	Florizel, 1768
							Maiden

ST. SIMON.

				Virgin		Sir Peter, 1784
						7th Dam
St. Angela, 1865	King Tom, 1851	Harkaway, 1834	Economist, 1825	Whisker, 1812	Waxy, 1790	Pot-8-os, 1773
						Maria, 1777
					Penelope, 1798	Trumpator, 1782
						Prunella, 1788
				Floranthe, 1815	Octavian, 1807	Stripling, 1795
						7th Dam
					Caprice, 1797	Anvil, 1777
						Madcap, 1774
			Fanny Dawson, 1825	Nubocklish, 1811	Rugantino, 1804	Commodore, 1794
						7th Dam, 1791
					Butterfly	Master Bagot, 1787
						7th Dam
				Miss Tooley, 1805	Teddy the Grinder, 1798	Asparagus, 1787
						Stargazer, 1782
					Lady Jane, 1796	Sir Peter, 1784
						Paulina, 1778
		Pocahontas, 1837	Glencoe, 1833	Sultan, 1816	Selim, 1802	Buzzard, 1787
						7th Dam, 1790
					Bacchante, 1809	Williamson's Ditto, 1800
						7th Dam, 1791
				Trampoline, 1825	Tramp, 1810	Dick Andrews, 1797
						7th Dam, 1803
					Web, 1808	Waxy, 1790
						Penelope, 1798
			Marpessa, 1830	Muley, 1819	Orville, 1799	Beningbrough, 1791
						Evelina, 1791
					Eleanor, 1798	Whisky, 1789
						Y. Giantess, 1790
				Clare, 1824	Marmion, 1806	Whisky, 1789
						Y. Noisette
					Harpalice, 1814	Gohanna, 1790
						Amazon
	Adeline, 1851	Ion, 1835	Cain, 1822	Paulowitz, 1813	Sir Paul, 1802	Sir Peter, 1784
						Pewet, 1786
					Evelina, 1791	Highflyer, 1774
						Termagant, 1777
				5th Dam, 1819	Paynator, 1791	Trumpator, 1782
						7th Dam
					6th Dam	Delpini, 1781
						7th Dam
			Margaret, 1831	Edmund, 1821	Orville, 1799	Beningbrough, 1791
						Evelina, 1791
					Emmeline, 1817	Waxy, 1790
						Sorcery
				Medora, 1811	Selim, 1802	Buzzard, 1787
						7th Dam, 1790
					6th Dam, 1803	Sir Harry
						7th Dam
		Little Fairy, 1832	Hornsea	Velocipede, 1825	Blacklock, 1814	Whitelock, 1803
						6th Dam, 1799
					6th Dam, 1817	Juniper, 1805
						7th Dam, 1810
				Miss Cranfield	Sir Peter, 1784	Highflyer, 1774
						Papillon, 1769
					6th Dam	
			Lacerta, 1816	Zodiac, 1801	St. George	Highflyer, 1774
						7th Dam
					Abigail	Woodpecker, 1773
						Firetail
				Jerboa, 1803	Gohanna, 1790	Mercury, 1778
						7th Dam, 1779
					Camilla	Trentham, 1766
						Coquette


Galopin, 1872
Vedette, 1854
Voltigeur, 1847
Voltaire, 1826
Blacklock, 1814
5th Dam, 1816
Martha Lynn, 1837
Mulatto, 1823
Leda, 1824
Mrs. Ridgway, 1849
Birdcatcher, 1833
Sir Hercules, 1826
Guiccioli, 1823
Nan Darrell, 1844
Inheritor, 1831
Nell, 1831
Whitelock, 1803
6th Dam, 1799
Phantom, 1808
6th Dam, 1802
Catton, 1809
Desdemona, 1811
Filho-da-Puta, 1812
Treasure
Whalebone, 1807
Peri, 1822
Bob Booty, 1804
Flight, 1809
Lottery, 1822
Handmaiden, 1817
Blacklock, 1814
Madame Vestris
Hambletonian, 1792
Rosalind, 1788
Coriander, 1786
Wildgoose, 1799
Walton, 1799
Julia, 1798
Overton, 1788
Gratitude's Dam, 1796
Columpus, 1802
Lucy Grey
Orville, 1799
Fanny
Haphazard, 1797
Mrs. Barnet, 1806
Camillus
7th Dam
Waxy, 1790
Penelope, 1798
Wanderer, 1811
Thalestris, 1809
Chanticleer, 1787
Ierne, 1799
Escape, 1802
V. Heroine
Tramp, 1810
Mandane, 1809
Walton, 1799
Anticipation
Whitelock, 1803
7th Dam, 1799
Comus, 1809
Lisette, 1772
Flying Dutchman, 1846
Bay Middleton, 1833
Sultan, 1816
Cobweb, 1821
Barbelle, 1836
Sandbeck, 1815
Barbiolette, 1822
Selim, 1802
Bacchante, 1809
Phantom, 1808
Filagree, 1815
Catton, 1809
Orvillina
Amadis
Selima
Buzzard, 1787
7th Dam, 1799
Williamson's Ditto, 1800
7th Dam, 1791
Walton, 1799
Julia, 1798
Soothsayer, 1808
Web, 1808
Columpus, 1802
Lucy Grey
Beningbrough, 1791
Lydia, 1791
Don Quixote, 1784
Fanny
Selim, 1802
7th Dam
Flying Duchess, 1853
Merope, 1841
Voltaire, 1826
Blacklock, 1811
5th Dam, 1816
4th Dam, 1817
Juniper, 1805
5th Dam, 1810
Whitelock, 1803
6th Dam, 1799
Phantom, 1808
6th Dam, 1802
Whisky, 1789
Jenny Spinner
Sorcerer, 1796
Virgin
Hambletonian, 1792
Rosalind, 1788
Coriander, 1786
Wildgoose, 1799
Walton, 1799
Julia, 1798
Overton, 1788
Gratitude's Dam, 1796
Saltram, 1780
Cadish, 1775
Dragon
7th Dam
Trumpator, 1782
Young Giantess, 1790
Sir Peter, 1784

N. 1881

ST. SIMON

St. Simon is a brown horse, with a star on the forehead and some white on the near hind-heel. He was bred by Prince Batthyany in 1881, and is by Galopin out of St. Angela, who was also the dam of Angelica and the grandam of Orme. St. Simon is 16 hands 1 inch in height, and is the property of his grace the Duke of Portland. He commenced his racing career as a two-year-old (1883) by winning the Halnaker Stakes at Goodwood, and at the same meeting he beat the colt by Balfe-Katrine for the Maiden Stakes. At Derby, in the same year, he won the Devonshire Nursery Plate, carrying 8 st. 12 lbs. in a large field; and later, at Doncaster, he won the Prince of Wales' Nursery Plate, carrying 9 st., and giving 14 lbs. to the heaviest weighted of his twenty-one opponents.

He finished up his first season by beating the Duke of Richmond in a match at equal weights for £500.

As a three-year-old he continued his unbroken record. Commencing at Newmarket, he won the Trial Match from Tristan, and walked over at Epsom for the Epsom Gold Cup. Later in the year he won the Gold Cup at Ascot, the Gold Cup at Newmarket, and finished up a brilliant season by winning the Goodwood Cup from Ossian, who was beaten twenty lengths.

As a stallion he has been widely patronized, and his stock have displayed an amount of speed and stamina perhaps unprecedented in the annals of the turf.

His sons and daughters have won more classic races than those of any horse since the time of Stockwell.

The Derby was won by Persimmon (1896), and Diamond Jubilee (1900); the St. Leger by Memoir (1890), La Fleche (1892), Persimmon (1896), and Diamond Jubilee (1900); the Oaks by Memoir (1890), La Fleche (1892), Mrs. Butterwick (1893), Amiable (1894), and La Roche (1900); the Two Thousand Guineas by St. Frusquin (1896), and Diamond Jubilee (1900); and the One Thousand Guineas by Semolina (1890), La Fleche (1892), Amiable (1894), and Winnifreda (1900).

His daughters have also been fruitful of good horses, especially those of the blood of Hampton and Melbourne.

In 1896 his stock won £59,740; nearly approaching to that of Stockwell, whose offspring in 1886 aggregated the sum of £61,195.

				Nan Darrell, 1844			Anticipation		
							Whitelock, 1803		

as a guide for the conduct of the breeding operations of the latter, are as worthy of credence amongst impartial men as is the dictum of a contemporary horse-raiser who transmits all information concerning his horses to the editor of a stud-book.

The exact sources from which the Hackney originally sprang nearly two centuries ago are never likely to be known—that is to say, of course, so far as the dams of the original animals are concerned. On the sires' side, however, the most ample and sufficient evidence is forthcoming, and many animals now before the public can be traced back to the Darley Arabian and other pillars of the *Thoroughbred Stud-book*. A very tenable theory that has been propounded as throwing light upon the origin of the Hackney, is that which suggests that Eastern stallions, such as the horse above referred to and the Godolphin Arabian, were put to many sorts of mares, and whilst the offspring of their unions with gallopers were utilized for racing purposes, their sons and daughters from trotting and Flemish mares formed the tap-roots of the various strains of Hackney. The above contention is, however, nothing more than conjecture, founded, it is true, upon very substantial grounds, though conjecture all the same; but regarding the antiquity of the Hackney under the name by which he is still recognized there is no question whatsoever. This is most clearly demonstrated by Mr. H. F. Euren in his preface to volume I of the *Hackney Stud-book*, which contains a veritable mine of wealth so far as references to the breeding of this class of horse is concerned. John Laurence, too, in his *Philosophical and Practical Treatise on Horses*, which was published in the course of the eighteenth century, alludes definitely to the Hackney; and again in his *History of the Riding Horse* the last-named writer associates the Hackney with the Roadster as an acknowledged variety of horse.

One might go even further back, were it necessary to do so, to discover references to the Hackney in ancient writings, for at so remote a period as A.D. 1350 the following sentence appears in the *Vision of Piers Plowman*, "Hakeneyes hadde thei none, bote hakeneyes to hyre". The very expression itself bears evidence of the antiquity of a distinct variety of horse, for as Mr. Euren very forcibly puts it, there can be but very little ground for doubting that the word Hackney is derived from the Anglo-Saxon *hneegan*, which meant to neigh. There appear substantial reasons, therefore, for assuming that the mares of this variety, and very possibly, as suggested above, of Flemish blood as well, were put to the Eastern stallions, which effected so much improvement in the Thoroughbred, and that from these unions have sprung the strains of Hackney that can be traced back to the eighteenth century.

One thing about the horses of one hundred and fifty years ago that is

certain, is that they were far smaller than their descendants, but the difference in size may be easily accounted for by the better stabling, feeding, selection, and management that the Hackneys of the present day are favoured with; though it may be added, that beyond a doubt all varieties of horse have increased in stature since the period referred to. It does not, however, appear from the published writings of old authors that the horse-breeders of the past were over particular as regards the height at shoulder of their steeds. Master Blundeville, of Newton Flotsham, Norfolk, who wrote and flourished in the reign of good Queen Bess, was careful to impress upon his readers the desirability of breeding from tall roomy mares "of a high stature strongly made large and faire", but unfortunately he omits to mention the stature which in his opinion was high. Blundeville, however, was exceptionally well qualified to express an opinion upon the subject of what he was pleased to refer to as the "trotting pase", for his part of the country, East Anglia, has from time immemorial been one of the strongholds of trotting horses. Even so far back as the fifteenth century, one Dame Margaret Paston, in the course of a letter addressed to her absent lord, informs him that "there be bought for you three horses at St. Faith's Fair, and all be trotters, right fair horses, *God save* them, and they be well keeped". One of the earliest reliable references that may be quoted as applying to the height of stallions in the olden days appears in the *Norwich Gazette* of 1725 in the form of an advertisement of a gray horse which stood 14 hands; but before a hundred years had elapsed such giants as Silvertailed Fireaway (West's), who was foaled in 1807 and stood 16 hands, were in existence, and it may be mentioned that he in turn sired Phenomenon Fireaway, who stood 16·2 hands. This height was considerably in advance of that which was common a few years ago, when 15·2 hands was recognized as the maximum shoulder measurement by the Royal Agricultural Society of England; but in response to the appeals of Hackney-breeders the Council of the "Royal" removed their restrictions upon horses over this height competing at their shows, with beneficial results to all parties concerned. Of late years a very perceptible increase in the height both of Hackneys and Hackney-bred horses has been perceptible, and in the summer of 1895 King Edward (then Prince of Wales) disposed of a pair of Hackney-bred harness horses, which stood just a trifle under 16 hands, for a thousand guineas, a circumstance which, did it stand alone, would afford a practical and unassailable demonstration of the value of Hackney blood, and likewise of the height to which Hackneys may attain. It will probably, however, be some little time before this class of horse will average anything like 16 hands, especially when it is remembered that for years the Royal Agricultural Society of England was disqualifying animals

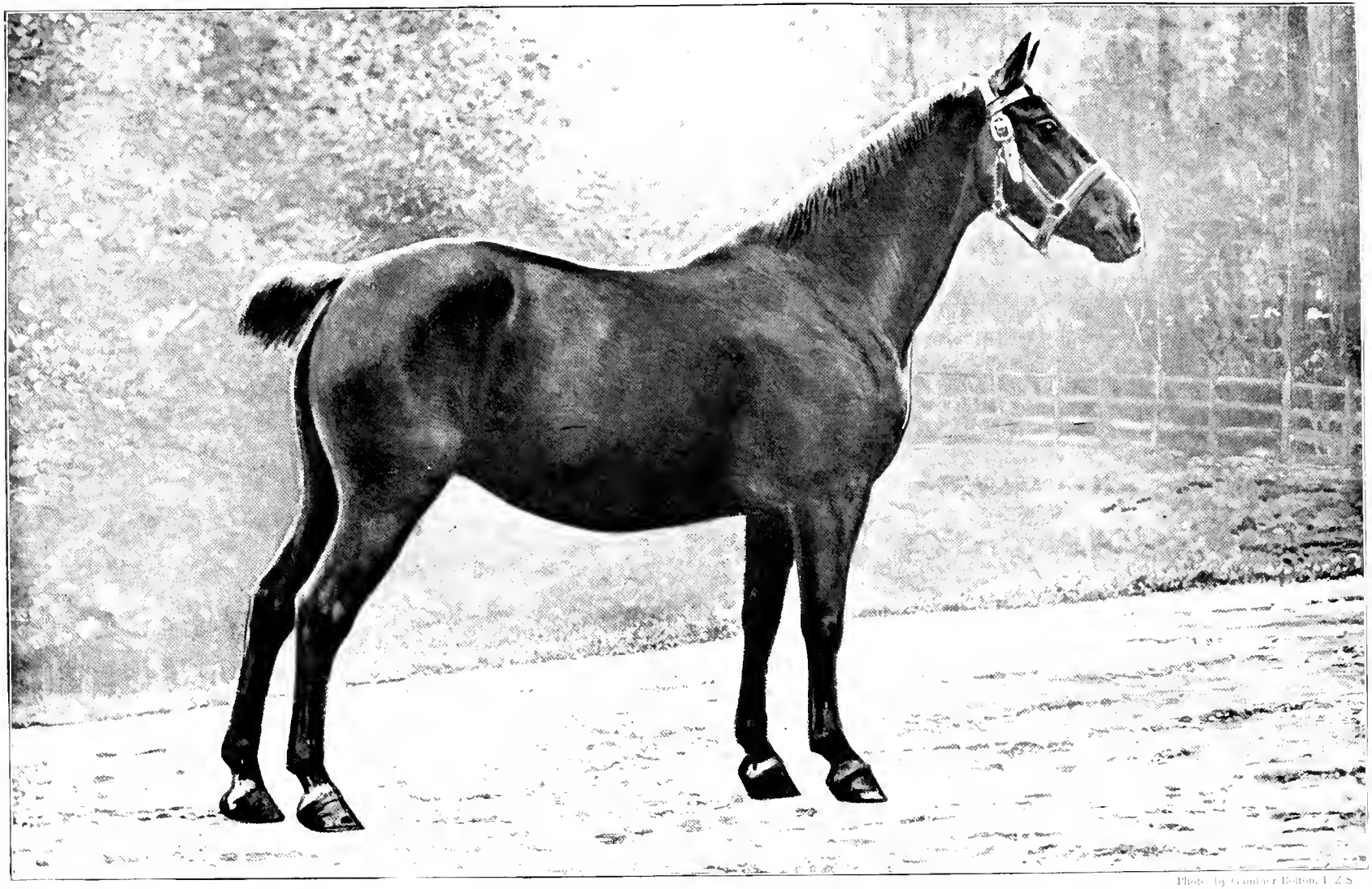


PLATE XVI.

Photo by Gunther Bolton, F.Z.S.

HACKNEY MARE, LADY DEREHAM 2891

By Ritualist 1542; dam, 2010 Dorothy by Lord Derby II 417. Winner of numerous prizes
The Property of Mrs. Temple

exceeding 15·2 hands, but nevertheless the fact remains that the stature of the Hackney is steadily increasing.

Reverting, however, to the palmy days of this breed of horse, which may be taken to have been at the commencement of the nineteenth century, at which time the variety was well established and vastly popular amongst farmers generally, some allusion may be made to the speed and stamina of the Hackney of those days. For instance, the doings of a granddaughter, by Driver, of old Shales, the fountain-head of many a famous modern strain of Hackney, is credited with the negotiation of 15 miles within the hour carrying 15 stone upon her back. This is smart trotting certainly, but the old horse himself possessed a record of 17 miles within the 60 minutes—an altogether extraordinary performance when the conditions under which the feat was performed are considered, as the state of the roads was doubtless inferior to that met with now by equestrians in the country. So far back as the year 1800 a 14·2 hands, twelve years' old mare, named Phenomena, negotiated 17 miles on the Huntingdon Road in 4 minutes under the hour, and was afterwards backed to trot 19½ miles within the 60 minutes, but the match fell through on account of the supporter of time paying forfeit when he learned that Phenomena had covered 4 miles in under 11 minutes in a trial. Of course this little mare was an altogether exceptionally speedy trotter—in fact, the Duke of Leeds cheerfully paid 1800 guineas for her at one period of her career—but at the same time a number of the Hackneys which existed about that period were very fast. A case in point is Read's Fireaway, which, after he had carried off the second prize offered at the Agricultural Society's meeting, was again brought out, and trotted his mile in 2 minutes 49 seconds, though the weight he carried is not recorded, an omission that is certainly to be regretted in the interests of sport. It is probable, of course, that the accuracy of such performances as those quoted above may be questioned by some who read these lines; but the fact remains that in each case there was a backer of time who paid his money over them, and he at all events would scarcely have been weak enough to do so unless fully satisfied that he had lost his wager. Moreover, the announcement that the party behind time in the last of Phenomena's matches referred to above—which was for 2000 guineas—was content to pay forfeit affords ample proof that the correctness of the time test was then accepted, and attention paid to it. Consequently, therefore, there appears to be but very little justification for traversing the accuracy of the old records, and more especially so as the then watch-holder was confining his calculations to fractions of minutes, and not of seconds, as is now the case on trotting tracks. It is therefore highly probable that had the sport

of trotting been as popular amongst Englishmen as it is on the other side of the Atlantic, the Hackney, instead of now occupying the honourable position of emperor of harness horses, and the most useful of ride-and-drive animals, would be regarded as a valuable instrument for gambling purposes, and that this extra appreciation of his merits would have effected a considerable increase in both his monetary value and his speed.

Having thus discussed the origin and acquirements of the early Hackney, it becomes necessary to consider the appearance of the horse, which, it may reasonably be inferred, was a heavier, stouter animal than the type now fashionable. This conjecture may legitimately be hazarded for two reasons: first, because the horse has become more finely bred, and has got further away from the old foundation stock, the mares of which were probably pretty coarse and plain; and secondly, on account of the requirements of his owners being very different from what they were well-nigh a century ago. The class of horse that was required to carry a burly agriculturalist, and occasionally his wife as well, to market upon his back, must naturally have been more stoutly built than the quality-showing animals which now grace the show-ring and charm the public by their display of elegance combined with action. Upon this part of the question there can be no two opinions; and it would be paying but a very slight compliment to the intelligence and resources of Hackney breeders to deny them the possession of the amount of acumen which would have convinced them of the advisability of raising lighter animals, and the faculty for accomplishing what they desired by careful selection of their breeding stock. It must consequently be accepted as a fact that the old-time Hackney was exceptionally powerful, and was possessed of a considerable amount of speed at both actions, walking and trotting—for many a Hackney can trot faster than he can gallop; the latter gait is not affected by the breed—for, as Mr. Euren asserts, it is quite true that it was not an unusual occurrence for the old Norfolk farmer to ride fifty or sixty miles a day. Therefore it is certain that, in addition to being strongly built, the old horse must assuredly have possessed both speed and stamina. To ensure the latter he must have had plenty of depth of chest, and likewise ample width, so as to give ample accommodation for his heart and lungs; whilst his shoulders must have been long and sloping, else he would have proved a very rough, if not impossible, conveyance for the farmer who rode him, to say nothing of the lady seated on the pillion behind her husband. Associated with these sloping shoulders, if old portraits are to be believed, were short flat legs and a plentiful, if not excessive, supply of bone, whilst the

Denmark was a chestnut horse, 152, bred by William Rickell, Warter Wold, Pocklington. He was foaled in 1862, by Sir Charles (Beal's) 768, out of a mare by Merryman 1309 by Lund's Merrylegs 449. His dam was 23 years old when, with Denmark a foal at her foot, she won the first prize at the Great Yorkshire Show at Driffield. The great majority of the most fashionable hackneys of the present day have descended from this horse.

Among his more famous sons are Confidence (Moore's) 163, Danegelt 174 (for which Sir Walter Gilbey gave 5000 guineas), Dorrington 184, Lord Derwent 418 (a great prize-winner), Candidate 920, Dorrington II 956, Connaught 1453, Ritualist 1542, and others.

Among his more famous daughters are Princess 289, Lady Dorothy 185, Sovereign 325, Lady Watton II 470, Apology 527, Lady Mary II 464, Sweetbriar 514, Nelly III 800, Countess 424, Primrose 827, and Ophelia 1301.

Denmark won a number of prizes in Yorkshire between 1865 and 1876, but his achievements at the stud were greater than in the show ring.

DENMARK, 1

DAM

Merryman, 1309

Merrylegs (Lund's), 449

Performer (Ramsdale's), 547

Pretender (Wroot's), 596

Fireaway (Jenkinson's), 201

6th Dam

Driver, 187

T. Jenkinson's Mare

Joseph Andrews

Shales (The Original), 699

8th Dam

Joseph Andrews

Roundhead

Haldenby's Prince

5th Dam

Pickering's Horse

6th Dam

Walmsley's Horse

7th Dam

Trotting Jalap

Sportsman

4th Dam

Fireaway, 201

Fireaway, 203

Driver, 187

T. Jenkinson's Mare

Pagan

Shales, 699

Joseph Andrews

Spectator

Fireaway, 208

Emmett's Trotting Mare

Skyscraper

5th Dam

3rd Dam

Atlas (R. Ramsdale's)

4th Dam

W. Wright's Farmer's Delight

5th Dam

2nd Dam

Fireaway (Burgess), 208

Fireaway (Jenkinson's), 201

Fireaway (West's), 203

Emmett's Trotting Mare

Skyscraper

Driver, 187

T. Jenkinson's Mare

Pagan

Highflyer

4th Dam

Shales (The Original), 699

7th Dam

Joseph Andrews

Spectator

Blaze

A Hackney Mare

Foxhunter

Roundhead

Hyperion

All Fours

3rd Dam

Sir Charles, 768

Performer (Taylor's), 550

2nd Dam

Merrylegs (Lund's), 449

3rd Dam

Performer (Ramsdale's), 547

4th Dam

Pretender (Wood's), 596

5th Dam

Alfred

6th Dam

Fillis De Puta

7th Dam

Sportsman

Wildfire (R. Ramsdale's), 864

3rd Dam

Phenomenon (R. Ramsdale's), 573

4th Dam

Lund's Mare

5th Dam

Sportsman (Wright's)

6th Dam

Fireaway (Burgess), 208

7th Dam

Fireaway (West's), 203

8th Dam

Fireaway (Jenkinson's), 201

9th Dam

Driver, 187

T. Jenkinson's Mare

Egan

Highflyer

Scot Shales, 692

Jenkinson's (Long Sutton) Mare

Hue and Cry (Marshall's), 373

Hue and Cry (Marshall's), 373

Dove's Fretting Mare

Merrylegs (Lund's), 449

4th Dam

Performer (Ramsdale's), 547

5th Dam

Pretender (Wood's), 596

6th Dam

Fireaway (Jenkinson's), 201

7th Dam

Driver, 187

T. Jenkinson's Mare

Joseph Andrews

Pickering's Horse

Walmsley's Horse

8th Dam

Shales (The Original), 699

9th Dam

Joseph Andrews

Roundhead

Pickering's Horse

Walmsley's Horse

7th Dam

Haldenby's Prince

8th Dam

Marshland Shales, 435

9th Dam

Shales (Thistleton's), 702

Jenkinson's (Long Sutton) Mare

Hue and Cry (Marshall's), 373

Dove's Fretting Mare

Sportsman

8th Dam

Fireaway (Jenkinson's), 201

9th Dam

Driver, 187

T. Jenkinson's Mare

Egan

Highflyer

Scot Shales, 692

Jenkinson's (Long Sutton) Mare

Hue and Cry (Marshall's), 373

Hue and Cry (Marshall's), 373

Dove's Fretting Mare

Haldenby's Prince

9th Dam

Fireaway (Jenkinson's), 201

10th Dam

Driver, 187

T. Jenkinson's Mare

Joseph Andrews

Pickering's Horse

Walmsley's Horse

9th Dam

Shales (The Original), 699

10th Dam

Joseph Andrews

Roundhead

Pickering's Horse

Walmsley's Horse

8th Dam

Fireaway (Jenkinson's), 201

10th Dam

Driver, 187

T. Jenkinson's Mare

Egan

Highflyer

Scot Shales, 692

Jenkinson's (Long Sutton) Mare

Hue and Cry (Marshall's), 373

Hue and Cry (Marshall's), 373

Dove's Fretting Mare

Sportsman

9th Dam

Fireaway (Jenkinson's), 201

10th Dam

Driver, 187

T. Jenkinson's Mare

Egan

Highflyer

Scot Shales, 692

Jenkinson's (Long Sutton) Mare

Hue and Cry (Marshall's), 373

Hue and Cry (Marshall's), 373

Dove's Fretting Mare

LORD DERBY

NANCY

Achilles (Hainsine's), 2

Fireaway (Scott's), 22[illegible]

3rd Dam

Phenomenon (Ramsdale's), 573

2nd Dam

3rd Dam

4th Dam

Fireaway (Ramsdale's), 222

4th Dam

Norfolk Phenomenon (Bond's), 522

Wildfire (R. Ramsdale's), 864

Lund's Mare

Fireaway (P. Ramsdale's), 222

Fireaway (Burgess'), 208

5th Dam

Performer (Ramsdale's), 547

5th Dam

Norfolk Cob, 475

5th Dam

Roan Mare

5th Dam

Borodino

5th Dam

Sportsman (G. Wright's)

5th Dam

Fireaway (Burgess'), 208

5th Dam

Fireaway (West's), 203

6th Dam

Pontefland

6th Dam

Cockfighter

6th Dam

Fireaway (Read's), 202

6th Dam

Smolensko

6th Dam

Fireaway (West's), 203

6th Dam

Pontefland

6th Dam

Fireaway (Jenkinson's), 201

Emmett's Trotting Mare

Skyscraper

7th Dam

Waxy

7th Dam

Pretender (Wroot's), 596

7th Dam

Haldenby's Prince

7th Dam

Overton

6th Dam

Fireaway (West's), 203

7th Dam

Marshland Shales, 435

6th Dam

Pretender (Wroot's), 596

Read's Trotting Mare

Fireaway (Jenkinson's), 201

Emmett's Trotting Mare

Skyscraper

7th Dam

Shales (Thistleton's), 702

T. Jenkins' Mare

Smuggler (Chadd's), 789

7th Dam

Fireaway (Jenkinson's), 201

Emmett's Trotting Mare

Skyscraper

7th Dam

Waxy

7th Dam

Trip

7th Dam

Driver, 187
T. Jenkinson's Mare
Pagan
8th Dam
Highflyer
8th Dam

Driver, 187
T. Jenkinson's Mare
Joseph Andrews
8th Dam
Pickering's Horse
8th Dam
Walmsley's Horse
8th Dam

Delpini
8th Dam

Fireaway (Jenkinson's), 201
Emmett's Trotting Mare
Skyscraper
8th Dam
Shales (Thistleton's), 702
T. Jenkins' Mare

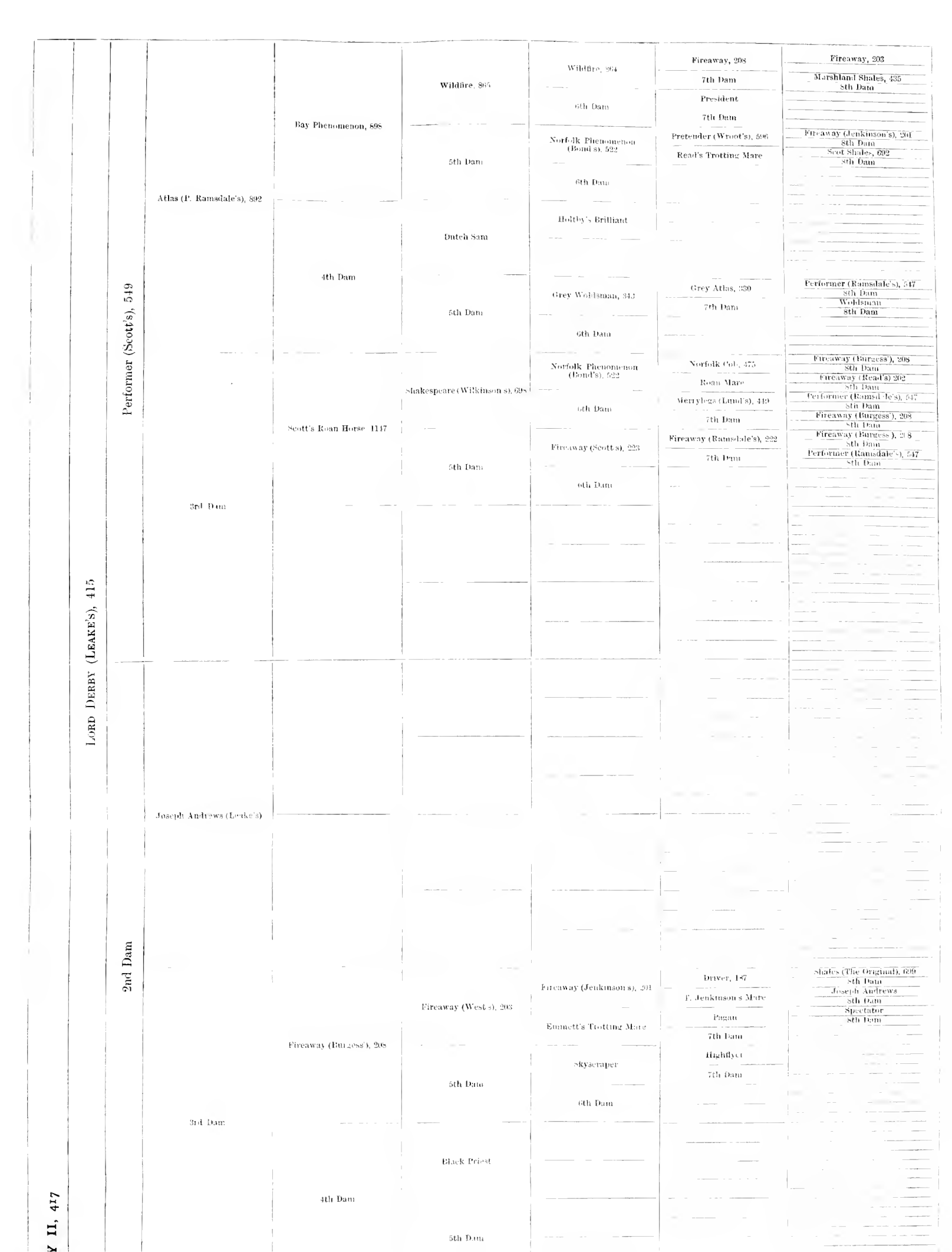
Fireaway (Jenkinson's), 201
8th Dam
Scot Shales, 692
8th Dam

Driver, 187
T. Jenkinson's Mare
Pagan
8th Dam
Highflyer
8th Dam

Scot Shales, 692
Jenkinson's (Long Sutton) Mare
Hue and Cry (Marshall's), 373
8th Dam
Hue and Cry (Marshall's), 373
8th Dam

Driver, 187
T. Jenkinson's Mare
Pagan
8th Dam
Highflyer
8th Dam

Granby
8th Dam


Performer (Scott's), 549
Lord Derby (Leake's), 415
Atlas (P. Ramsdale's), 892
Bay Phenomenon, 898
Wildfire, 864
Dutch Sam
Norfolk Phenomenon (Bond's), 522
Holtby's Brilliant
Grey Woldsman, 343
Norfolk Phenomenon (Bond's), 522
Shakespeare (Wilkinson's), 698
Scott's Roan Horse 1147
Fireaway (Scott's), 223
Fireaway, 208
President
Pretender (Wroot's), 596
Read's Trotting Mare
Grey Atlas, 330
Norfolk Colt, 475
Roan Mare
Merrybegs (Lund's), 449
Fireaway (Ramsdale's), 222
Fireaway, 203
Marshland Shales, 435
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Emmett's Trotting Mare
Skyscraper
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F. Jenkinson's Mare
Pagan
Highflyer
Shales (The Original), 699
Joseph Andrews
Spectator
2nd Dam
3rd Dam
4th Dam
5th Dam
6th Dam
7th Dam
8th Dam

Y II, 417

LORD DERBY II (BURNHAM'S) 417

Lord Derby II was bred by Mr. J. R. Burnham, Frodingham Hall, Winestead, Yorkshire, in 1871. He was a dark-brown horse by Lord Derby (Leake's) 415, out of Nancy by Achilles (Hairsine's) 2 by Fireaway (Scott's) 223. This horse has sired many notable animals, and his blood when crossed with that of Denmark has given us some of the most distinguished of our modern hackneys.

Among his sons who have made names at the stud and in the show ring are: County Member 948, Cadet 1251, East Riding 1475, Lord Derby III 1508, Lord Rattler 2566, Grand Fashion II 3024, Gentleman John 3624, Lord Denby II 3092, Contest 1746, and others.

Among his daughters are to be found Princess 499, Ladybird 177, Silver Belle 508, Brunette 49, Lily 219, Modesty 1731, Dorothy 2016, Propriety 4597, Lady Sarah 2963, Dorothy Derby 1081, Levity 2247, Frisk 439, and Falka 2043.

Lord Derby II was equally successful in the show ring as at the stud, and in the course of his career won many prizes in Yorkshire.

middle piece of the ancient horse was a good deal heavier than would now be cared for in a show animal.

At the same time, the modern Hackney must be accepted as representing very strongly the leading characteristics of the old stamp of horse. Admitted that he is lighter, and perhaps more blood-like to suit the requirements of the age as suggested above, his form is, generally speaking, very much the same, even though it be presented upon somewhat more delicate lines. As to conformation:—

The head should not possess the delicacy of that of the Thoroughbred; neither should the coarseness of the Shire horse be apparent in it, a plain underbred expression or a clumsy head-piece being most particularly objectionable in any Hackney, and especially so in a mare. At the same time, an effeminate look, or the appearance of a gelding-like head upon a stallion, is a serious fault, for the prepotency of this horse is great, and a sire which fails to impress a masculine appearance on his colts is seldom popular amongst breeders. Moreover, it may be remembered that though style in a horse is indispensably associated with merit in most breeds, one does not require a superfluity of the commodity about the head, but would rather have it distributed equally and in correct proportions about the animal. Thus, an exceptionally blood-like head on a Hackney stallion would, if the horse was symmetrically proportioned, necessitate a reduction of his substance, and then he would become a weed; and consequently it may be repeated, that the head of a Hackney stallion should be there in plenty, provided always that it be properly proportioned in itself and in its relation to the rest of the body. It should be rather wide about the jowl, and taper gradually towards the muzzle—a Roman nose or a narrow jowl are abominations in any horse, the one frequently denoting a surly disposition, and the other completely destroying the character of the head. The eyes of a Hackney are of a good size, and nicely placed in his skull, and should be soft, amiable, and intelligent-looking, denoting the courageous and confiding disposition which is very characteristic of the horse. A small or sunken eye is usually identified with uncertainty of temper and general unreliability, whilst its possession detracts immeasurably from the beauty of any animal. Finally, the ears should be small, pointed, carried erect, and set on high; a big round-tipped ear is not infrequently accompanied by objectionable coarseness, whilst a lop ear which is carried out almost level with the top of the head is simply hideous, and should tell greatly against any sire, for the formation is often hereditary.

The crest should be pronounced in the case of a stallion, and the neck rather long, though it looks shorter than it really is on account

of its massiveness; but it must not be imagined that because the neck of a Hackney is big and powerful it should necessarily be coarse. A thick clumsy neck is as bad as a short one in the case of any saddle-horse, and worse than a thin narrow one. The neck of the Hackney possesses a peculiarly graceful bend, and gradually increases in its dimensions until it reaches the shoulders. But it should be quite free from coarseness.

The shoulders themselves are one of the most important points, for if they and their associated muscles are short there is no flexibility to be found about them. They should also slope well backwards to ensure the much-sought-for smoothness of action that everybody admires; whilst the existence of a mere suspicion even of superfluous lumpiness about the points is a very serious fault.

The chest of the Hackney should be broad, not so broad as to influence his speed or action, but yet wide enough to afford room for the free play of both heart and lungs. For similar reasons it should be deep, but this depth is not so striking in the Hackney as in the case of some other varieties, owing to the fact that this horse is, or should be, exceptionally deep about the back ribs, and consequently is more level in his lower line than most breeds.

The fore-legs should be short; very big in the arms; heavy and flat in bone; with nicely sloping powerful pasterns, not long enough to be weak, yet sufficiently springy and sloping to minimize concussion; and the feet should be on the large side, deep and set on dead straight, an in-toed Hackney being simply an abomination. The knees should be rather big, but so should the entire limb; and it is a most serious fault if the horse stands back upon them—a calf-kneed horse, in fact, should never take a prize of any kind, or be utilized as a sire.

The back should not be long; but a sufficiency of room both in front of and behind the saddle must be sought for, whilst the back itself must be level and present an exceptionally powerful appearance. Of course in the case of aged horses a dip is no disqualification, as late in life its appearance is only to be expected. A flat-sided Hackney is not appreciated, for the ribs should be well sprung, and, as stated before, the back ones should be unusually long. The quarters, another most important feature, should be long. To this formation an appearance of length of back is often due. They must, moreover, be as level as possible and powerful-looking.

The tail, which is usually docked short, is set on high, and carried gaily when its possessor is excited, or set going at his best.

The hind-legs are very muscular about the thighs and second thighs,

not too much bent at the hock, and possess a considerable amount of bone below that joint. The pasterns, moreover, should be of a nice length without showing a trace of weakness.

In general appearance the Hackney, assuming that he is a representative horse, should strike even a stranger to the merits of the breed as a remarkable combination of activity, strength, and symmetry. Unless he carries himself jauntily the first attribute is likely to be lost sight of, and if he does not display power all over he ceases to be a good specimen of his race. In the case of no other variety of horse is symmetry a more important property than in the Hackney, for a coarse animal is as unlikely to command success as a very light one. Perhaps even more so, for, as it has been suggested above, there has been a strong disposition of recent years to introduce a more blood-like class of animal to the public; but whilst breeders can scarcely be blamed if they attempt to meet the requirements of the market, it will be an error on the part of judges if they award prizes to narrow split-up stallions. Even that great equine attribute, "quality", may be too dearly purchased, and the recognition of a light flashy race of Hackney stallions will assuredly effect an immense amount of mischief to the breed; moreover, it is by no means impossible for refinement to be associated with substance, many splendid instances of the combination being alive.

The action of the Hackney is one of the most important, in fact the most characteristic feature of the breed, no horse in existence being capable of extending himself as does a good specimen of the variety. As is only to be supposed, it is his shoulder action that plays the most prominent part in his movement; but it may still be observed that a Hackney, before he can be regarded as a goer, must use all his joints in harmony with his shoulders. His knees, pasterns, stifles, and hocks must all be correctly flexed before the beau ideal of that poetry of motion, that incomparable one, two, three, four, which so distinguishes the Hackney from all other horses, can be arrived at. There should be an immense amount of liberty about the shoulder action, the fore-legs being as it were dashed out in front so that it almost appears that the horse is endeavouring to get rid of them. The knees in turn should be doubled and then extended straight, whilst the pastern-joints first bend the hoof backwards and then straighten themselves, so that the feet are stretched out in a straight line with the fore-leg, and affect a momentary poise in the air before being brought down upon the ground. All these varied movements are transacted so instantaneously as to be almost imperceptible, but the *tout ensemble* is as described above. Meanwhile the back-legs are acting, or should be, as powerful motors for the

propulsion of the body. The hocks and stifles are bent, the former being tucked in under the horse's belly, so that when the feet reach the ground they are in a line with, and apparently close behind, the fore ones. Great goers, especially if they are fast, are often inclined to move wide at the hocks, but this is an unsightly style of action, and will tell against a horse to a greater or less extent, though it may be added that some very notable performers, both upon the turf and elsewhere, have moved with their hocks very far apart from one another. Dash, fire, and freedom in his action are all essential to the success of a Hackney; and if possible to a still greater extent, so is that smoothness and levelness of motion which is always a characteristic of the perfect-actioned horse. Dash, in fact, need no more necessitate the presence of roughness or rockiness in a horse's action than need the fault of dishing, *i.e.* throwing out the feet beyond the line of the fore-leg when the pasterns are bent upwards, be associated with high stepping. Both are nasty faults, and the possession of either will most probably mean the forfeiture of a prize.

The question of shoulder and knee action is one, however, upon which opinions of Hackney breeders may be accepted as differing somewhat. Otherwise it would not be possible for some horses to have won the prizes which stand to their credit, for animals have before now carried off high honours in the show-ring which have entirely failed to get away in front, owing to their having used their knees to a far greater extent than their shoulders. This is the class of horse that conforms to the description "all action but no go", for he lifts his knees almost up to his bit, and then puts his feet down again close to the place whence he took them up. This fighting style of going is surely not comparable to the action advocated above, especially when it is remembered that the feet must suffer from being smashed down upon the ground, and that half the animal's energies are being wasted in his fruitless beating of the air. A horse that uses his shoulders need not necessarily omit to bend his knees, and in addition to proving a fine and showy mover, will undoubtedly be a far more comfortable conveyance for his rider, whilst it stands to reason that his legs will last much longer than those of the other class of animal. The position of the shoulders, and other points in the structural development of the Hackney, such as the length of neck, strength of loin, and length and slope of pasterns, are of course a more important consideration in the selection of a Saddle than a Harness horse; but it must always be borne in mind that the latter is the more saleable animal, in addition to being the more correct type of the breed, and consequently, when the two varieties meet, the preference should always be given to the Harness horse. Indeed, the modern Hackney is not an ideal saddle horse.

CONFIDENCE (DOYLEY'S) 158

The most famous of Norfolk's Hackneys in recent times was the celebrated horse Confidence. Bred by Mr. William Rose, Dykebeck, Wymondham, in 1867, he passed into the hands of Henry D'Oyley, of Hempnall, Long Stratton. Confidence was a black-brown, 15·2 hands high, and had for his sire Prickwillow (Tice's) 614, his dam being by Highflyer (Jacob's) 360.

Among his best sons were Confidential 1379, Canvasser 114, Confidant III 1741, John Gilpin 1499, Harvester 1799, Gem 2082, Felicity 2064, Doctor Syntax 877, Cassivelaunus 2198, Helon Surprise 2509, Fashion (Grout's) 199, Realty (Flander's) 665, Honesty 369, Lord Bardolph 412, and others.

His best daughters during his later life were Her Majesty 1137, Acclamation 1, Kiss me Quick 2853, Nelly 2349, Carmen Sylva 3578, Lady Isabella 2194, Wild Mint 1399, Twilight 4819, and Mascotte 1706

Dam

2nd Dam

Highflyer (Jacob's), 360

3rd Dam

Flying Buck (Grove's), 250

4th Dam

Creeper (Templeman's

5th Dam

Grey Norfolk Hero (Smith's), 335

5th Dam

Shales (Bedin's)

4th Dam

Norfolk Hero (Wigg's), 495

5th Dam

Nicholson's Trotting Mare

6th Dam

Marshland Shales, 456

7th Dam

T. Jenkin's Mare

8th Dam

Shales (Thistleton's), 702

Jenkinson's (Long Sutton) Mare

Hue and Cry (Marshall's), 573

Pretender (Brigham's), 604

4th Dam

Norfolk Hero (Munn's), 474

5th Dam

Norfolk Hero (Wigg's), 495

6th Dam

Marshland Shales, 456

7th Dam

Marshland Shales, 456

8th Dam

Scot Shales, 692

Jenkinson's (Long Sutton) Mare

Hue and Cry (Marshall's), 573

Performer (Taylor's), 530

5th Dam

Black Pretender

6th Dam

Merrylees (Lupp's), 449

7th Dam

Performer (Ramsdale's), 547

8th Dam

Performer (Ramsdale's), 547

Phenomenon (Ramsdale's), 573

6th Dam

Lupp's Mare

7th Dam

Atlas (Ramsdale's)

8th Dam

Atlas (Ramsdale's)

Wildfire (R. Ramsdale's), 864

7th Dam

Merrylees (Lupp's), 449

8th Dam

Merrylees (Lupp's), 449

Pretender (Wroot's), 596

6th Dam

Hero

7th Dam

Hero

8th Dam

Standard

Lord Fitzwilliam's Blacklegs

5th Dam

Harkaway

4th Dam

Fireaway, 201

5th Dam

Skyscraper

7th Dam

Fireaway (Jenkinson's), 201

7th Dam

Hero

8th Dam

Valerius

8th Dam

Standard

Driver, 187

T. Jenkinson's Mare

Joseph Andrews

8th Dam

Fireaway, 201

8th Dam

Skyscraper

Fireaway (Jenkinson's), 201

8th Dam

Snuggler (Chadd's), 789

9th Dam

Bellfounder (Jary's), 55

4th Dam

Velocity (Jary's)

5th Dam

Velocity (Jary's)

Bellfounder (Steven's), 52

5th Dam

Bellfounder (Lord Sudeley's)

6th Dam

Gold Leaf (Wright's)

7th Dam

Pretender (Wroot's), 596

7th Dam

Bellfounder (Steven's), 52

6th Dam

Velocity (Jary's)

7th Dam

Bellfounder (Jary's), 55

8th Dam

Pretender (Wroot's), 596

8th Dam

Pioneer

8th Dam

Cook's Pioneer

7th Dam

Pioneer

8th Dam

Shales (Thistleton's), 702

T. Jenkin's Mare

Whiskey

8th Dam

Fireaway (Jenkinson's), 201

8th Dam

Performer (Ramsdale's), 547

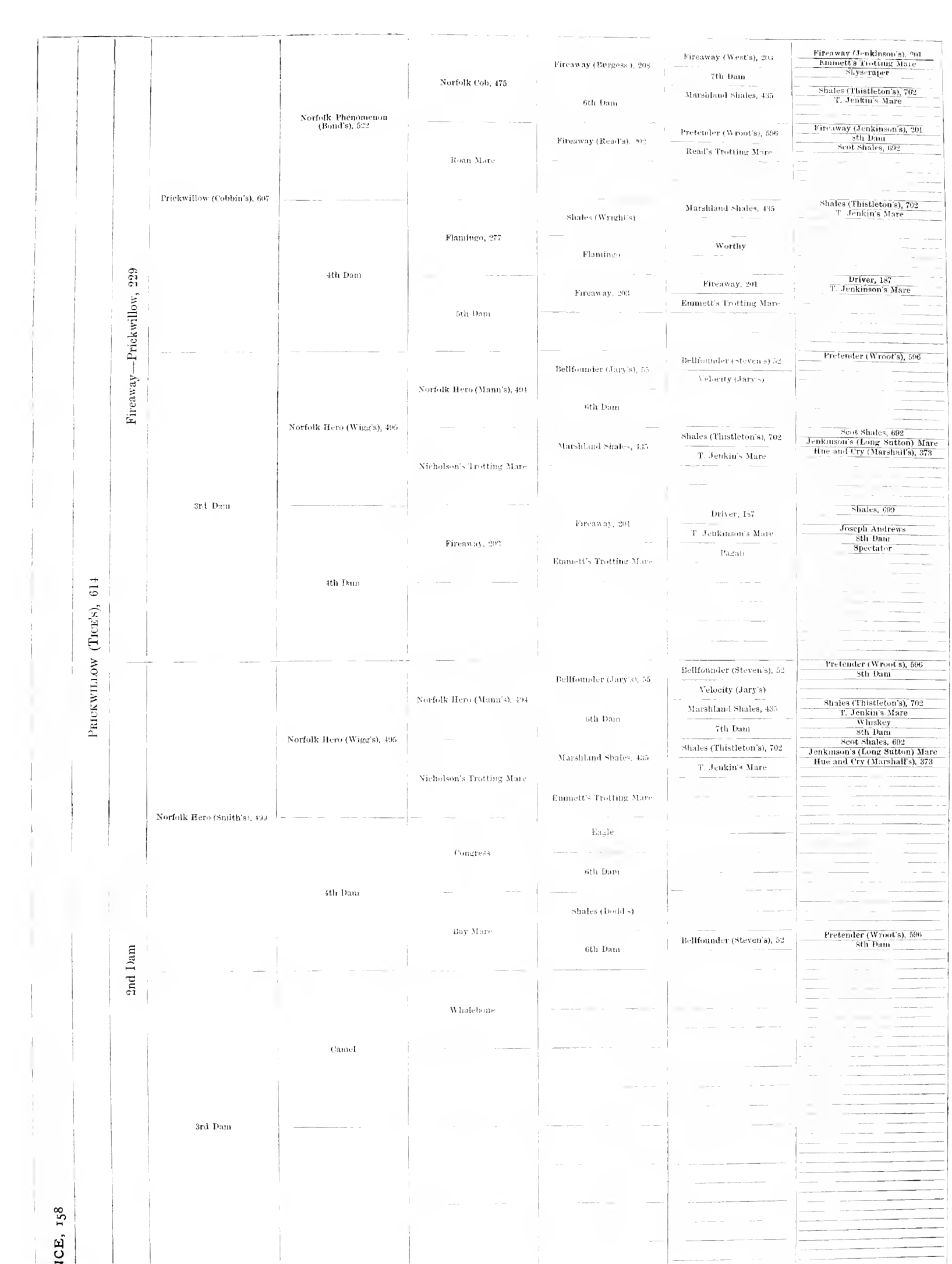
9th Dam

Atlas (Greenwood's)

8th Dam

Atlas (Greenwood's)

9th Dam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Prickwillow (Cobbin's), 607
Norfolk Phenomenon (Bond's), 522
Norfolk Cob, 475
Roan Mare
Fireaway (Read's), 902
Fireaway (Burgess'), 208
6th Dam
Pretender (Wroot's), 596
Read's Trotting Mare
Fireaway (West's), 201
7th Dam
Marshland Shales, 435
Fireaway (Jenkinson's), 201
Emmett's Trotting Mare
Shyscraper
Shales (Thistleton's), 702
T. Jenkin's Mare
4th Dam
Flamingo, 277
Shales (Wright's)
Flamingo
Fireaway, 203
5th Dam
Marshland Shales, 435
Worthy
Fireaway, 201
Emmett's Trotting Mare
Shales (Thistleton's), 702
T. Jenkin's Mare
Driver, 187
T. Jenkinson's Mare
3rd Dam
Norfolk Hero (Wigg's), 495
Norfolk Hero (Mann's), 494
Nicholson's Trotting Mare
Bellfounder (Jary's), 55
Velocity (Jary's)
6th Dam
Marshland Shales, 435
Bellfounder (Steven's), 52
Velocity (Jary's)
Pretender (Wroot's), 596
8th Dam
Shales (Thistleton's), 702
T. Jenkin's Mare
Scot Shales, 692
Jenkinson's (Long Sutton) Mare
Hue and Cry (Marshall's), 373
4th Dam
Fireaway, 203
Emmett's Trotting Mare
Driver, 187
T. Jenkinson's Mare
Pagan
Shales, 699
Joseph Andrews
8th Dam
Spectator
Norfolk Hero (Smith's), 499
Norfolk Hero (Wigg's), 495
Norfolk Hero (Mann's), 494
Nicholson's Trotting Mare
Bellfounder (Jary's), 55
Velocity (Jary's)
6th Dam
Marshland Shales, 435
Shales (Thistleton's), 702
T. Jenkin's Mare
Bellfounder (Steven's), 52
Velocity (Jary's)
Pretender (Wroot's), 596
8th Dam
Shales (Thistleton's), 702
T. Jenkin's Mare
Whiskey
8th Dam
Scot Shales, 692
Jenkinson's (Long Sutton) Mare
Hue and Cry (Marshall's), 373
4th Dam
Congress
Bay Mare
Eagle
6th Dam
Shales (Dodd's)
6th Dam
Bellfounder (Steven's), 52
Pretender (Wroot's), 596
8th Dam
3rd Dam
Whalebone
Camel

NANCY

Performer (Ward's)

2nd Dam

Fireaway, 201
T. Jenkinson's Mare
Pagan
Sky scraper
7th Dam
Eastliver
5th Dam
Scot Shades, 692
5th Dam
Blue and Cry, 375
5th Dam
T. Jenkins' Mare
5th Dam

Driver, 187
T. Jenkinson's Mare
Joseph Andrews
5th Dam
Shades (The Original), 690
"A well bred Hunter"

Scot Shades, 692
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5th Dam
Fireaway, 201
5th Dam

Driver, 187
T. Jenkinson's Mare
Joseph Andrews
5th Dam
Valerius
5th Dam
Standard

Fireaway, 201
6th Dam
Sky scraper
6th Dam
Scot Shades, 692
6th Dam
Blue and Cry, 375
6th Dam
T. Jenkins' Mare
6th Dam

Fireaway, 201
6th Dam
Pretender, 586
7th Dam
Scot Shades, 692

Fireaway, 201
6th Dam
Pretender, 586
7th Dam
Marshland Shades, 435
Beads Trotting Mare

Fireaway, 201
6th Dam
Marshland Shades, 435
Beads Trotting Mare

Fireaway, 201
6th Dam
Pretender, 586
7th Dam
Marshland Shades, 435
Copt Ogden's Trotting Mare

Fireaway, 201
6th Dam
Pretender, 586
7th Dam
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Pretender, 586
7th Dam

Fireaway, 201
7th Dam
Hero
7th Dam
Standard
7th Dam

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Joseph Andrews
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Valerius
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Fireaway, 201
6th Dam
Pretender, 586
7th Dam
Black Shades, 83
Hewson's Roan Mare

Fireaway, 201
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Prince (Jackson's)

Fireaway, 201
7th Dam
Hero
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Standard
7th Dam

Driver, 187
T. Jenkinson's Mare
Joseph Andrews
5th Dam

Fireaway, 201
7th Dam
Hero
7th Dam
Standard
7th Dam

Norfolk Phenomenon (Bond's), 522

Norfolk Colt, 477

5th Dam

Fireaway (Read's), 202

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3rd Dam

Holloway (Johnson's)

Brown Shades, 102

4th Dam

Creeper (Wright's), 170

4th Dam

Creeper (Complemoor)

5th Dam

Lord Fitzwilliam's Blue Boy

6th Dam

3rd Dam

4th Dam

Fireaway (Scott's), 223

Fireaway (Ramsdale's), 222

3rd Dam

Fireaway (Burgess'), 208

4th Dam

Performer (Ramsdale's), 547

Cockfighter

Fireaway (West's), 203

5th Dam

Pretender (Wyatt's), 596

Overton

Fireaway (Burgess'), 208

Fireaway (Reed's), 202

Sunderland

Fireaway, 201

Emmett's Trotting Mare

Skyscraper

Pontefland

6th Dam

Trip

Fireaway (Jenkinson's), 201

6th Dam

Hubbenby's Prince

6th Dam

Palafox

5th Dam

Fireaway, 203

6th Dam

Marshland Shales, 455

5th Dam

Pretender (Wyatt's), 596

Reed's Trotting Mare

5th Dam

Driver, 187

T. Jenkinson's Mare

Pagan

Highflyer

Granby

7th Dam

Pickering's Horse

Walmsley's Horse

7th Dam

Delpini

Fireaway, 201

Emmett's Trotting Mare

Skyscraper

Shales, 702

T. Jenkins' Mare

Fireaway (Jenkinson's), 201

7th Dam

Scot Shales, 692

7th Dam

Shales, 699

Joseph Andrews

Spectator

Shales, 699

Joseph Andrews

Roundhead

Trotting Jalap by Jalap

Driver, 187

T. Jenkinson's Mare

Pagan

Highflyer

Scot Shales, 692

Jenkinson's Mare

Hue and Cry, 373

Driver, 187

T. Jenkinson's Mare

Joseph Andrews

Shales (The Original), 699

Dam

Norfolk Cob, 475

Norfolk Phenomenon (Bond's), 522

Roan Mare

Sunderland

Berenice

3rd Dam

FIREAWAY (TRIFFETT'S) 249

Triffett's Fireaway 249 was a dark-brown horse, 15·2 hands high, bred by Philip Triffett, Holme, Yorkshire, in 1859. He was by Achilles (Hairsine's) 2, out of Nancy by Performer (Ward's) by Norfolk Phenomenon (Bond's) 522. He won a great number of prizes in Yorkshire, and continued his show career up to 1874.

As a stud horse he produced some excellent stock, especially mares, among which were a number of high-class animals, such as Polly 494, Jenny Bother'em 2124 (dam of Ophelia 1301), Polly Horsley 495, Queen Mary 295, Fanny 114 (dam of Connaught 1453), Empress 95 (dam of Sweetbriar 514, Princess 289, and Primrose 827), Lady Jane 197 (dam of Sovereign 325), and Lightsome 2248.

Cockfighter
Delpini

The walk of the Hackney is second in importance only to his trot, for however free a mover a horse of this breed may be when fully extended, he is sure to lose admirers if he is incapable of settling down to his slower paces when required to do so. Moreover, it stands to reason that no horse can be always moving at a trot, and he will soon disgust his owner if, instead of striding out and using his joints and limbs properly at his slower paces, he goes shuffling along in a fashion that partakes somewhat of the nature of a cramped trot, and yet is slower and more exhausting to himself than a good honest walk. Great as is the show made by a good Hackney when he trots, it is doubtful if he is not more majestic-looking when walking—that is to say if he can do so in proper form, for when he strides out with head erect, no nobler-looking horse exists than a good Hackney stallion; and moreover, as remarked above, the possession of a natural gift for walking adds considerably to the value of a sire.

Before leaving the Hackney, the extraordinary success of Sir Walter Gilbey's Hedon Squire at the Horse Show held in connection with the great International Show at Paris in 1900 must be referred to. Upon the occasion in question Hedon Squire was awarded the champion prize, offered for the best stallion in the show other than an Arab or a Thoroughbred, by a jury of judges representing different foreign countries. Surely no greater tribute to the merits of the breed could be desired, as he met and defeated the best Harness type of horses that the world could produce.

The Pack-horse.—It is unfortunately rather to the discredit of British horse-breeders that so useful a variety as the Pack-horse, which at one time was so commonly met with in many parts of the country, and particularly in Devonshire and Yorkshire, should have become practically extinct; but the fact remains, that until the occasion of the Crystal Palace Horse Show of 1897 it was popularly believed that no specimens of the breed could be found. After an infinite amount of trouble, however, had been expended on the search, a stallion and a mare were discovered, and by permission of their owners were included in the Diamond Jubilee parade of British horses, which was arranged in honour of Her Majesty Queen Victoria's long reign. The reproach, therefore, of permitting a breed of horse, to which in all probability more than one modern variety owes its existence, to die out entirely, cannot be applied to the men of Devon, though unhappily there is no denying the fact that instead of increasing in stature and power, the existing Pack-horses are lower at the shoulder and built on smaller lines than their ancestors. This is in all probability a direct result of the inbreeding which followed their

abandonment; the breed in its original purity falling into so few hands that the very limited number of adherents who have remained staunch in their allegiance to it have not been able to secure the crosses they desired, and consequently the stature of the Pack-horse has become less, and the old breed practically extinct.

A couple of hundred years ago, before the Hackney invaded Devonshire and Yorkshire, and when no other means of locomotion existed, the Pack-horse was an institution in the west and north of England, where he was not only employed in agricultural and ordinary road work, but as the medium for carrying supplies to the inhabitants of outlying holdings on the moors and wolds. In order to be of service in this respect, it was necessary that the horses should be powerful and sure-footed, and these are two properties which the ancient Pack-horse possessed to a very considerable extent. What the precise origin of this most ancient breed may have been there are unfortunately no means of ascertaining, but it is reasonable to assume that he was, in the first case, a cross-bred Eastern and old English War-horse. This theory is quite a possible one when it is remembered that a succession of English sovereigns engaged themselves in importing both Arab, Barb, and Turk stallions into this country with the laudable object of improving the native horses; whilst the existence of the War-horse, which had been increased in size by crossing with Flemish mares, renders it highly probable that this variety may claim the distinction of being a parent of the Pack-horse, and consequently a still more remote ancestor of the Cleveland Bay.

Be the origin of the Pack-horse, however, what it may, the indisputable fact remains, that until the invasion of Devonshire by railways and Hackney horses, the old breed was regarded on all sides as essential to the existence of the inhabitants of the west country, and he would have been a rash, if not reckless, individual who would have ventured to prophesy that it would ever become out of date, or be neglected by Devonians, who up to comparatively modern times utilized the Pack-horse for sporting as well as for general purposes. An illustration of this is forthcoming in the 16-hands Cottager, the property of Mr. Skinner, a resident near Totnes, which in a steeple-chase run at the annual race-meeting, held in that town about the middle of last century, succeeded in defeating the Thoroughbreds and cocktails which competed. The owner of this horse, moreover, had previously issued a challenge to trot him, against any animal in the west country, 4 miles on the road, carrying 14 stone, a fact which goes a long way towards proving that the Pack-horse was a fine and fast mover both at the gallop and at the trot.

Generally speaking, the Pack-horse, so far at all events as he exists at the present day, has a very great resemblance to the Hackney, as he has a deep chest, big level back, deep middle, and powerful quarters; his legs too are short, heavy in bone, and carry a great deal of muscle on the arms and thighs; but he differs very considerably from the Hackney in three most important points, namely, head, shoulders, and action. A Pack-horse's head is far more blood-like than that of the Hackney, its small size and delicate outline being most probably due to the possession of a strong strain of Arab blood; whilst his shoulders, as a rule, are longer and more obliquely set, for the Pack-horse was largely utilized for saddle work, the moors and hills of Devonshire being most unsuitable for vehicular traffic. Nor is the action of the Pack-horse so high as that of the Hackney, as in the first place an animal largely utilized for saddle purposes, if a stepper, would be a rather uncomfortable mount when negotiating the steep declivities and stony bridle-paths of Devonshire; and in the second place, the question of sure-footedness was more sought for by Devonians of the old school than an ability to bend the knee. At the same time it must not be imagined that the Pack-horse was not a very free and attractive mover, as all references to the breed allude to his action as being excellent in both respects. Another point of difference which exists between the Hackney and the Pack-horse is seen in the colours of the two breeds, for Packs were always bay, black, or brown, whilst a large percentage of Hackneys are chestnuts. Still, the resemblance between the few remaining survivors of the Pack-horse and the popular Hackney is considerable, though it is to be hoped that the slender ranks of the former will not be further reduced by crosses with the trotter, grand horse though the latter is, for England is large enough to find accommodation for a few specimens of an ancient horse, which has done good service in assisting old breeders to produce some popular varieties of the present day. Probably, moreover, there could be no finer cross for Hunter-breeding than the Pack-horse upon weedy, light-boned, "breedy" mares, from which it is desired to produce short-legged, heavy-boned stock capable of carrying weight.

The Cleveland Bay. — The subject of this paper stands pre-eminently forward as the eldest large-sized carriage horse of the day, and, as will be shown later, his antiquity is undeniable, though a very considerable amount of ambiguity exists as regards the precise origin of the breed. The date of his production is also quite unknown; but on the other hand there are good reasons for believing that, like most other English varieties, he is a descendant of the old English War-horse, which played so prominent a part in the early history of our

country, and which is fully referred to in the description of the Shire horse.

The War-horse, however, though small in stature, eventually increased in bulk by a judicious system of crossing with imported stallions, and no doubt became in due course of time too heavy an animal for light draught purposes, and hence it is but reasonable to infer the inhabitants of some districts were glad to do their best to produce an animal more suited to their requirements. This horse, it appears most probable, was the original tap-root from which the modern Cleveland Bay is descended; but owing to the fact that the majority of English horse-breeders were devoting their resources to the production of a powerful class of animal which would be serviceable in times of war to carry soldiers clad in armour—it being the command of successive kings that they should do so under heavy penalties—it is but natural that the advent of the lighter variety should have been delayed. Indeed, his services were scarcely required until a comparatively recent period in the history of the country, as it was not until almost the conclusion of the reign of Queen Elizabeth that Fitzalan, Earl of Arundel, first introduced light coaches into England, the aristocracy of which country had up to that period been in the habit of indulging in their carriage exercise in carts. No doubt, however, the coaches designed by the Earl of Arundel were cumbersome affairs, as the roads in his days were not exactly adapted for light vehicular traffic; but on the other hand, it is reasonable to infer that a less powerful horse than those which had been bred up to that time would be equal to drawing them, and hence it may be assumed that the attention of certain breeders was directed to the production of a lighter class of animal somewhere about the reign of good Queen Bess.

From that period until the present time there has, of course, been a steady improvement in our highways and a corresponding diminution in the size and weight of conveyances, with, of course, an increasing demand for the more lightly built yet powerful harness horses; and no doubt as highways have improved and the vehicles become more shapely and less cumbersome, horses have been bred to meet the requirements of the times. Consequently animals of the Cleveland type, either as he now exists or in his less finished form, have more and more been sought for by a certain class of horse owners, who have been anxious to procure an upstanding, imposing-looking animal, possessed of plenty of substance, and sufficient strength to draw heavy loads, but yet showing some quality and an ability to get over ground more actively than the breeds which were solely adapted for agricultural purposes.

As observed above, there can be very little doubt regarding the antiquity

of the Cleveland Bay, although diversity of opinion might reasonably be allowed as to his precise origin. Very probably the Thoroughbred has entered largely into his composition, and as it is in turn extremely likely that the Pack-horse was a scion of the old English War-horse, which is fully referred to in the chapter on Shire horses, it may be justifiable to argue that the ancient British race and the Eastern importations are responsible between them for the existence of the Cleveland Bay.

The theory that the breed is the result of the successful manipulation of the Thoroughbred and Cart-horse is scarcely so tenable as the one just propounded, as though it may be admitted that the Pack-horse and the Cart-horse are both descendants of the old English War-horse, the similarity that existed between them was by no means pronounced, the former being a far lighter, more blood-like animal, and therefore a better horse to work upon. It may also be observed that the quarters and some other points of the Cleveland Bay are the reverse of carty, and this circumstance affords further evidence of the improbability of the presence of Cart-horse blood.

Although it is suggested that the southern districts of England deserve some credit in the production of the Cleveland Bay horse, there can be no doubt at all that his development and improvement, indeed one might almost add his present existence as a recognized breed, is due to the northern part of the country whence he derives his name. This assertion is strengthened to some extent by the theory, that the black points which are so characteristic of the horse are the result of the introduction, at some remote period, of Scandinavian blood, and this was naturally far more easily procurable for the purpose of experiment in the Cleveland district than in the south. Nor, it may be added, was the Pack-horse solely confined to the last-mentioned part of the country, as under not only that designation, but under the title of the Chapman's Horse, he was pretty extensively known throughout England, and Yorkshire especially, being frequently alluded to by old writers on the equine race. On the other hand, the possibility of the south of England having produced the original tap-root of the Cleveland Bay, or the still greater probability of there at least being a strong dash of Devonshire blood in his composition, lies in the fact that the dark streaks or "list" down the back, which up to not so many years ago was a treasured point in the Cleveland Bay, is a distinguishing feature of the dun animals commonly found in the Devonshire district, though, of course, it is not entirely confined to the horses of the west country.

From all this, and much more that could be written were it necessary to do so, as to the possible origin of the Cleveland Bay, it will be seen that the question of the precise composition of the breed, like that of other

established varieties, can only receive an approximate answer, and this is by no means astonishing when it is remembered that the horse now under consideration can be traced back to the commencement of the eighteenth century. In fact, that not invariably reliable authority, "the oldest inhabitant", has asserted that the black-pointed bays were common in some parts of Yorkshire long before the importation of the Darley Arabian was an accomplished fact. This may, however, be quite possible without affecting the correctness of the contention put forth above, to the effect that the Cleveland Bay originated in an Arab cross, as undoubtedly Eastern horses had been imported into England years and years before the Darley Arabian appeared upon the scene; but under any circumstances full credit for the production of the Cleveland Bay is due to the district from which he derives his name.

The strong probability that a Thoroughbred cross was introduced some hundred and fifty years ago into the mares which have produced the modern Cleveland Bay is referred to by Mr. W. Scarth Dixon, in his admirable article on the breed which appears in *Light Horses*, as he there states that many of the best pedigrees trace directly back to a mysterious stallion known as "Old Traveller", of which no further information is forthcoming. There are evidences, however, to prove that a Thoroughbred stallion named "Old Traveller" was at the time covering mares in the Yarm district at a low fee, and there is much reason to believe that this animal was the horse whose name appears in many Cleveland Bay pedigrees.

It must not be supposed, however, that the horses which were bred two hundred years ago in Yorkshire under the name which heads this chapter, were all utilized as coach-horses. On the contrary, the majority of them were relegated to duty on the farm, a fact which is referred to in the *Farmers' Magazine* of seventy years ago, which states that, when a lighter class of animal came to be the fashion for carriage traffic, the Cleveland Bay was permitted to become practically extinct until its value for agricultural purposes was noticed by some practical farmers in the north of England. This statement would go to prove one of two things, namely that the Cleveland Bay of that period was a far more powerful animal than the modern possessor of the name, or that farm-work was not so heavy; and indeed it may be very likely that both these conditions are reconcilable, for oxen were largely utilized for the heaviest work. At the same time, the certainty that exists that Thoroughbred blood had been introduced long before the period to which the *Farmers' Magazine* refers, shows that the then existent Cleveland Bay was not a heavy horse; and assists in substantiating the correctness of the contention propounded some lines above, that the Cart-horse was not a component part of the variety.

SPECIALITY 1562

Speciality is a bay horse without white, and stands 16 hands 1 inch high. He is by Merryheart 1299, out of Beatrice 932, and was bred by Mr. J. Lett of Rillington, York.

He has been exhibited on ten occasions, and won nine first prizes and one second, including Champion prize for the best Cleveland Bay Stallion at the Great Yorkshire Show, and first prize at the Royal show at Cardiff in the same year.

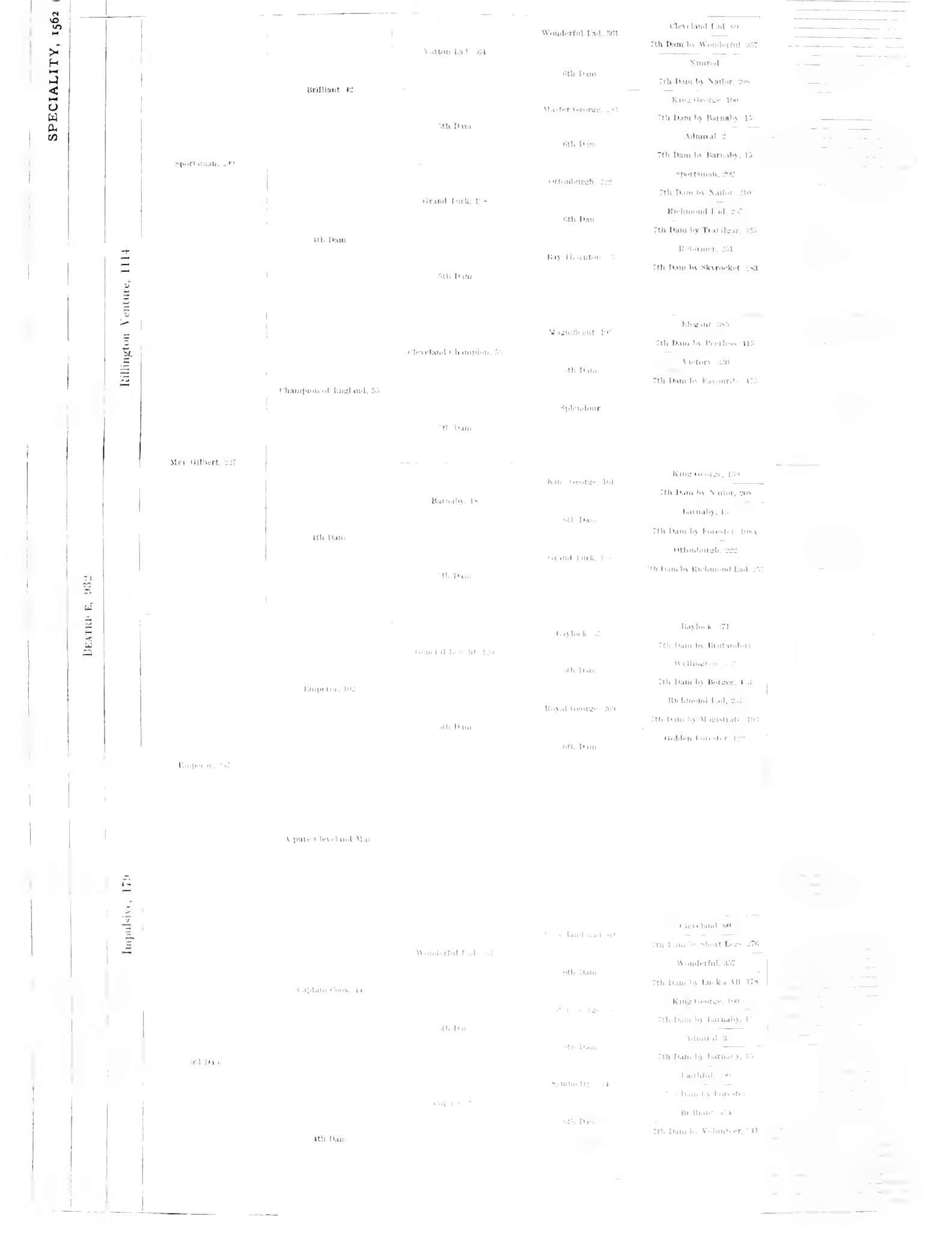
Speciality is a typical Cleveland showing excellent quality and grand all-round action.

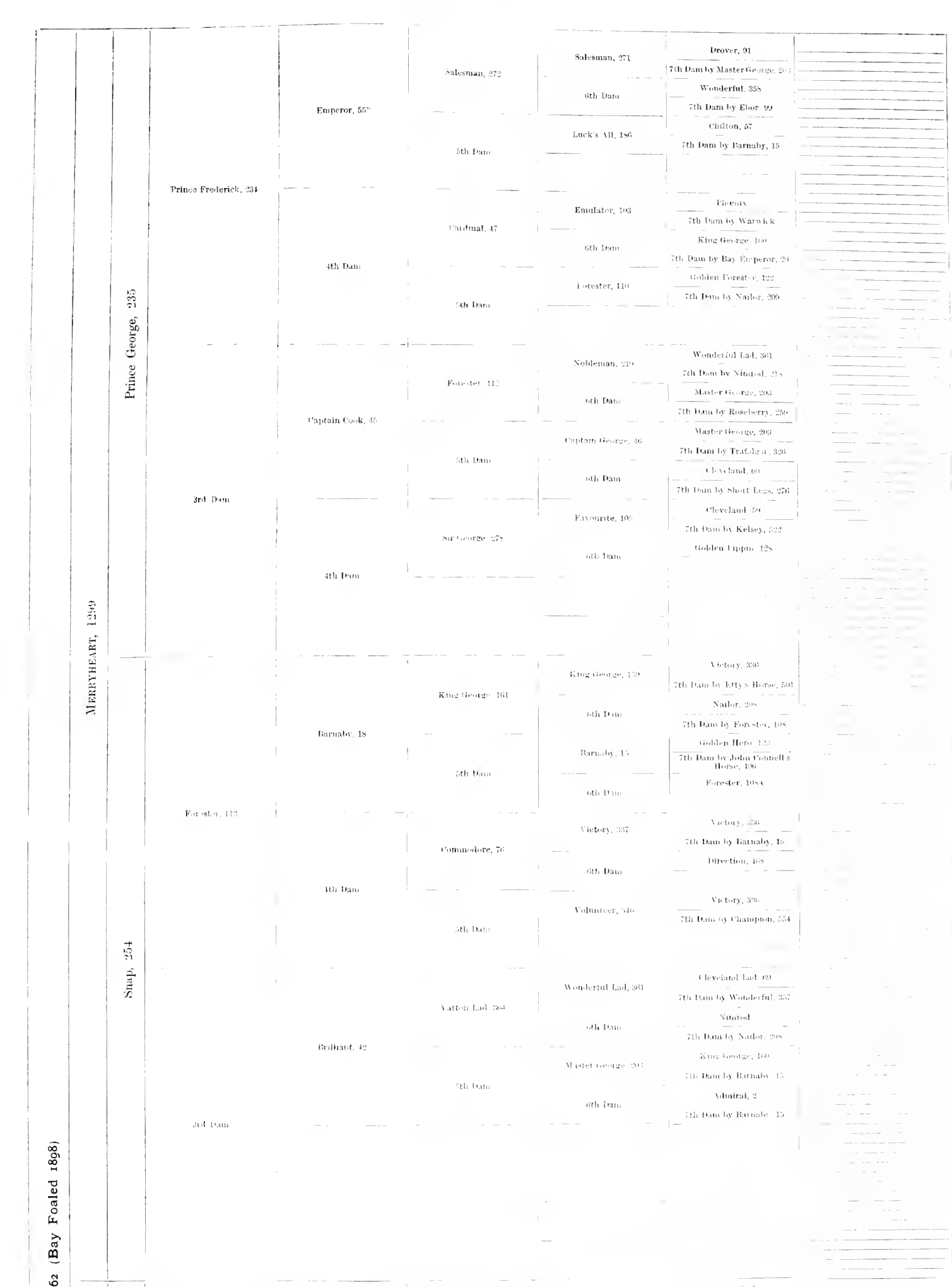
SPECIALITY, 1562

BEATRICE, 1932

Billington Venture, 1114

Impulsive, 179





62 (Bay Foaled 1898)

Indeed, it may be added that the experiments for introducing a strain of Cart-horse blood have been attended with most unsatisfactory results so far as the Cleveland Bay type has been concerned.

According to the *Cleveland Bay Stud-book*, which may be accepted as a reliable authority upon the subject with which it deals, namely the breeding of this class of horse, there exist three families—the "Dart", the "Barley Harvest", and the "Hob Hill Horse", to one of which all the best and most typical Cleveland Bays belong. No particulars, unless the statement "pedigree missing" can be accepted as information, is forthcoming regarding the first of this trio of tap-roots, but his son Agar's Rainbow, afterwards known as King George the Fourth, sired some excellent stock, though the date of his being foaled is not given in the *Stud-book*. The "Hob Hill Horse", or, to give him his real name, "Farmer's Glory", was foaled about 1798, and "Barley Harvest" a little before that period, since which time the pedigrees of Cleveland Bays have been far better kept. Unfortunately, however, all the breeders of this class of horse have not taken pains to keep it pure, and, moreover, the Cleveland Bay, as remarked above, was a victim of experiments which contributed a good deal towards his loss of prestige and popularity during a portion of the nineteenth century. As a case in point, the article written by J. B. Lloyd, which is published in the first number of the *Royal Agricultural Society's Journal*, may be quoted as proving how the breed was crossed. This gentleman states that about the year 1827 he "determined to try and breed some agricultural horses with more activity and little or no diminution of strength" on Cleveland lines, and for this purpose "purchased some Gloucester cart mares, as clean in the legs as he could get them". Consequently it behoves intending purchasers on the look-out for pure-bred Cleveland Bays to study the pedigrees of the animals which take their fancy very carefully, for though it is quite possible for the evidences of cart blood to be absent in some horses which inherit it, the taint is likely to appear sooner or later in their stock, and money may be thrown away and time wasted in breeding from them.

It appears, however, that the example of Mr. Lloyd was not followed by many breeders of the Cleveland Bay, and according to the Stud-book of the society which has been formed to further the interests of the breed, the period between the years 1851 and 1867 was a very fine one for the horse. After the latter year its popularity began to dwindle somewhat, probably on account, at least so it is suggested, of the increased attention which was being paid to the Shire horse and Clydesdale, for though the varieties in question can in no sense be regarded as rivals of the Cleveland Bay in looks or adaptability for fast harness work, the favour with which

they became regarded no doubt diminished the number of admirers of the lighter horse. The advent, or perhaps it may be more properly termed the resuscitation of the Hackney, has also proved beyond all doubt injurious to the progress of the Cleveland Bay, and the steady increase in the stature of the former breed causes it to become a more formidable rival every year. Public taste, too, has rather set in in favour of action, and here again the Hackney takes precedence of the big horse; whilst the hardness of the times has caused many scores of country gentlemen to reduce their studs; and in most instances the coach-horses, the duty of which was to draw the family landau round the Park during the London season, have been the first to go. At the same time the Cleveland Bay's position in the equine world is, at the time of writing, a very long way removed from being an unsatisfactory one. Indeed, it is incomparably superior to what it would have been had there been no Society at the back of the breed to look after its interests, and to provide some satisfactory guarantees as regards the genuineness of pedigrees. Many dealers too are consistent in their support of the big coach-horses, and favour the Cleveland Bay—when they can get them at a reasonable price—above all others; but in the case of professional purchasers, who only buy to sell again at a profit, their support is naturally more a matter of pounds, shillings, and pence than a sincere devotion to the breed they patronize. Consequently it must always be borne in mind that when a dealer has made his connection as a seller of a certain class of horse, it is to the highest degree improbable that he will forsake that particular variety for another if he can by any possibility avoid so doing.

It may, however, be once more repeated, that the resuscitation of the breed was accomplished by the appearance, in 1884, of volume 1 of the *Cleveland Bay Stud-book*, and since that date the managements of some of the great horse shows have evinced a disposition to try and give the variety a help along. This, it may be stated, has not invariably been associated with profitable results, and even the Royal Agricultural Society of England has found it necessary to amalgamate the classes of Cleveland Bays and Yorkshire Coach-horses, to the extreme concern, expressed and implied, of the admirers of either breed, who, nevertheless, have only themselves to thank for the reduction of their prizes, as they did not support the shows sufficiently. This rather suggests the existence of an apathetic spirit on the part of breeders of Cleveland Bays, who certainly are not to be credited with the push and go which characterizes the action of other horse-breeders; but against this charge the excuse may be made that the breed is in, comparatively speaking, a few hands, as the Cleveland Bay, though an excellent horse in his own particular line, is scarcely to

be regarded as being an animal for everybody's money. He possesses one great qualification, however, which should commend itself to all horse owners, and this is an unusually robust constitution; which circumstance is no doubt the cause of a good deal of the crossing that is going on between the Cleveland and other breeds, and possibly accounts for the relatively small number of the pure-bred "Bays" which are to be found. No doubt, however, the Cleveland and Hackney cross is fairly successful when the production of a sizeable animal possessed of high action is the object of a breeder, and extremely long prices have been realized for animals thus bred. Plenty of good hunters have also been bred from Cleveland Bay mares; but upon the whole this sort of breeding partakes so very much of the nature of a lottery, that the wise man who desires to turn a penny, usually seeks to produce a harness horse from his Cleveland Bay. At the same time stories are told of the ability some pure-bred representatives of the breed have displayed in the hunting-field, but it is scarcely conceivable that many very great feats were accomplished in this direction with any of the crack packs.

As to conformation, the head of a Cleveland Bay can scarcely be described as a very attractive or taking one, being inclined to plainness, but it is not a coarse head, and is usually well carried. The neck is of fair length and slightly arched, showing plenty of strength at the setting on, but at the same time it is free from coarseness and superfluous lumber. Some difference of opinion—up to a certain extent—exists amongst judges on the question of shoulders, for though it is probable that everybody prefers them well set and sloping, many persons argue that they regard the Cleveland Bay as a harness horse above all things, and that therefore the possession of a long sloping shoulder is not so essential in his case as it would be if he were used for saddle purposes. This contention is, of course, strongly opposed by those who regard the capacity of the breed from the other point of view, and there can be no doubt that the vast majority of the active supporters of the horse are dead in favour of a nicely placed shoulder. Upon the question of middle there are no differences of opinion, however, as the judges agree that the back of a Cleveland should be short, his girth considerable, his loins powerful, and his quarters long and level. He is wide in chest, and short on leg, though his height often makes him appear longer on his legs than he really is, and his arms and thighs can scarcely be too big and muscular. In the matter of bone the Cleveland Bay is conspicuously good, as not only is there plenty of it, but it is remarkably flat, and the quality is quite excellent, it being extremely dense, and the sinews show up prominently. The pasterns slope well, and the feet are large and truly

formed, the hocks being of good size with plenty of the right sort of bone below them, whilst the tail is set on rather high. His usual height is about 16 hands 2 inches, or a little more or less.

So far as the action of the Cleveland Bay is concerned, it cannot be successfully contended by his admirers that he possesses any of the fire and dash of his great rival the Hackney. Neither does he show the snap of the knee and peculiar poise of the fore-feet just before they touch the ground; nor of course does the big bay go nearly as high. On the other hand, the Cleveland Bay succeeds in giving a fine show when he is a good one, and he can get over the ground without losing much time, for he has plenty of shoulder and hock action, and cannot be accused of being a slovenly mover, but very much the reverse. In colour the true Cleveland must always be a bay. There are no two opinions about this, though it does not necessarily follow that the bay must always be of any one particular shade. On the contrary, although the lighter shade predominates, many of the finest-looking specimens which have been seen of the breed, animals possessing moreover pedigrees which have been absolutely above suspicion, have been of the darkest shade, and no objection has been raised against any of them, nor ought any to have been. The legs below the knees and hocks should be quite black, and above them, on the forearms and second thighs, some black horizontal stripes, such as those which appear on the zebra, are often to be seen. These, when found, are not objected to, in fact many persons regard them as signs of good breeding; but a white blaze on the forehead, or a white heel, are regarded as signs of impurity of blood, and will at once condemn their possessor to be suspected as a cross-bred. Some authorities would not reject an otherwise good horse for a very small star on the forehead, or a few white hairs on the heel, but a Cleveland Bay is all the better without either. The dark stripe down the back, or "list", is regarded very favourably by many breeders, but is not to be accepted as an infallible proof of pure breeding any more than are the zebra-like stripes on the thighs and quarters. A possible explanation of the appearance of these markings has been suggested above, and assuming it is a correct surmise, it speaks volumes for the prepotency of the old Devonshire dun. So far as the general appearance of the Cleveland Bay is concerned, it may be stated that he is a big upstanding, massive, yet active-looking animal, and conveys the impression to those who look him over of being an extremely powerful carriage horse, and therefore well calculated for heavy vehicles: but his "quality" is not conspicuous.

Finally, the temper of a pure-bred Cleveland Bay is all in his favour, as he is a docile, willing worker, if not ill-treated and put to feats beyond

his strength. It is true, however, that his reputation for pluck and stamina has been impugned by some persons who have crossed him with the view of producing a hunter, and who have pronounced him soft. This, however, is scarcely a fair charge to bring, as, in spite of the protestations of the thick-and-thin admirers of the Cleveland Bay, the horse is more adapted for harness than for saddle, and it therefore is surely running him out of his course to expect an animal to discharge duties for which he was never intended.

The Yorkshire Coach-horse.—The subject of this article so closely resembles the Cleveland Bay in appearance that there is considerable difficulty in distinguishing between the representatives of either breed on the part of those who are not experts on the subject of horse-flesh. It is therefore perhaps permissible, heretical though it may appear to some minds, to regard the Yorkshire Coach-horse as an offshoot of the Cleveland Bay, which he is very like, though he shows more quality and breeding.

The Yorkshire Coach-horse has been recognized by horse-breeders as a distinct variety for a hundred years. It is only, however, within a comparatively recent period that he has been taken seriously in hand by those who, in the best interests of the horse, have placed restrictions on the operations of breeders, with the result that the Yorkshire Coach-horse is now the recipient of a fair share of public attention. At the same time, the existence of a remote Thoroughbred cross has been fully recognized by the members of the Yorkshire Coach-horse Society, who, whilst endeavouring to promote the interests as a breed of the animal they are pledged to support, are sufficiently liberal in their views to admit the benefits which the Coach-horse has derived from both the Thoroughbred and the Cleveland Bay.

Beyond all doubt the Yorkshire Coach-horse owes his origin to the Cleveland Bay-Thoroughbred cross, the object of the founders of the breed being the production of a horse which stood very high at the shoulder, and combined a great amount of quality with a sufficiency of substance. As time progressed, more Thoroughbred blood was introduced, the result being that a certain amount of weediness ensued, and this weediness it has been the chief desire of later breeders to counteract. A coaching stallion of quality to a Cleveland Bay mare was a very popular cross, and the result was, as might be expected, a valuable harness horse—as the plainness of the Cleveland Bay was neutralized by the breeding of the sire, whilst there was plenty of power about the youngster. On the other hand, the introduction of a superfluity of Thoroughbred blood resulted in loss of size and lightness of bone; and as the Yorkshire Coach-horse should be a tall animal and yet possess substance, it was speedily recog-

nized that the Thoroughbred cross, if persisted in, might soon become prejudicial to the interests of the breed.

The difficulty in attempting to trace the pedigrees of Yorkshire Coach-horses may be appreciated when it is stated that at least one animal appears in the Stud-books of both the Cleveland Bay and Yorkshire Coach-horse Societies. Still, the efforts of the society which bears the name of the breed will doubtless be rewarded by an improvement in the horse, and will eventually lead to the encouragement of breeders to abjure the introduction of extraneous blood, with the result that the stylish blood-like Yorkshire Coach-horse will be universally recognized as a defined breed, as he deserves, and without the further assistance of either a Thoroughbred or a Cleveland Bay.

As may be supposed from the greater amount of quality he shows, the Yorkshire Coach-horse is a more active-looking and stylish animal than the Cleveland Bay, and his action and liberty are preferred by many. On the other hand, he does not possess the bone and substance of the Bay, as may readily be imagined when it is remembered that the blood of the Thoroughbred circulates so freely in his veins. His close relationship, however, with the aristocracy of the equine world assures the Yorkshire Coach-horse the possession of a great deal of quality, and beyond all doubt the acquisition of this great virtue endears him to many people who vote the Cleveland Bay a commoner. At the same time it must be confessed that at present there is a good deal of dissimilarity amongst even the best-known Yorkshire Coach-horses, some of which are much more blood-like and therefore narrower than others, this being no doubt due to their relationship to either the Thoroughbred or the Cleveland Bay, as the case may be.

In appearance, however, the Yorkshire Coach-horse very closely resembles the Cleveland Bay, but he shows a good deal more style and finish, and is not so pronounced in substance, owing to his possession of so much Thoroughbred blood. Indeed, he displays far more quality than would be acceptable to the ordinary judge of the big Bays, whilst his head is more refined and his crest more arched. Perhaps, too, his action is freer upon the whole, but this is more a matter for consideration when the points of individual animals come to be reckoned up, than a general characteristic of the breed. The Coach-horse likewise fails in bone when brought into comparison with the Cleveland Bay, and is, generally speaking, the lighter, corkier animal of the two. He is usually a taller horse, as good specimens often reach 17 hands, and in colour may be either bay or brown. Any other shade of coat is strongly objected to, and white markings are disliked, though a spot on the forehead or

a little white on the heel are not unfamiliar to judges. In most of their essential properties, however, the Cleveland Bay and the Yorkshire Coach-horse are very closely allied, the two varieties representing the best type of heavy coachers we possess, whilst both of them have been frequently crossed with the Hackney of late years.

The Hunter. — Although there are few horses more sought after than a first-rate weight-carrying Hunter, the fact remains that in the vast majority of cases the animal belongs to no definite breed, most Hunters being made up of the Thoroughbred sire crossed with a mare of more or less doubtful pedigree. It may, however, be at once conceded that a very great number of men who ride to hounds would prefer being mounted on a clean-bred horse to a half-bred one, provided that a suitable animal was forthcoming; but the supply of Thoroughbreds available for the purpose of hunting men is limited, and consequently a composite animal has to be produced. It is scarcely complimentary to the Hunter, that he should be the only variety of horse whose admirers confess themselves unable to produce him as a distinct breed. On the other hand, the confessed inability of most Hunter-breeders to work without the direct assistance of the Thoroughbred is a direct testimony to the value of the latter horse.

At the same time, although surprise may be expressed at the recognized difficulty of producing a breed of Hunters, the general admission of the fact must be accepted, for the present at all events. It is a very regrettable circumstance, nevertheless, as until there is some reliability concerning the pedigree of a breeder's stock, there will always be a great deal of uncertainty regarding the results of the experiments he may make. The establishment of the Hunters' Improvement Society has, however, done much to assist the raisers of this class of animal, and the inclusion of mares in the Stud-book they publish must in the course of a few years contribute very materially to further progress in the direction of their purpose. It is therefore possible that in the dim and far-off future Hunter-breeders may succeed in establishing a definite breed for themselves.

Nor should modern Hunter-breeders be blamed by those who may disagree with their opinions as to the necessity for the introduction of Thoroughbred blood, for every important authority of the past has expressed some very similar views upon the question. Whyte Melville, in his *Hunting Recollections*, thus places what was in his mind before his readers: "In all the qualities of a Hunter, the Thoroughbred horse is, I think, superior to the rest of his kind"; but this good sportsman and fine writer proceeds immediately to qualify somewhat his praise by adding

that the Thoroughbred all the same may not always be the pleasantest of mounts. Dick Christian, whose valuable opinions upon the question of Hunters have been immortalized by "The Druid", was precisely of the same opinion, and he expressed himself in very similar though perhaps more emphatic terms; whilst "Nimrod" (Mr. Apperly), in 1842, although he did not advocate the claims of the clean-bred horse as a Hunter, recognized the desirability of a bit of blood in his composition. The remarks of the last writer, so far as they have reference to the Thoroughbred being used in the field, may perhaps be accepted as a reply to the suggestion made by Blaine two years previously, when he observed that it would be well worth the while of hunting men to purchase some likely young Thoroughbreds that were not fast enough for racing, and having thrown them up for a time, to proceed to make them into Hunters.

From these references to the opinions of men whose names are still household words in the hunting world, it will be seen that if the out-and-out sticklers for blood are wrong in the views they possess upon the subject of Hunter-breeding, they are erring in extremely good company. Moreover, in view of the uncertainty which the opinions referred to foreshadow, it is scarcely probable that Hunter-breeders would summon up the heart or courage to make experiments on a large scale. They certainly do not appear to have exerted themselves very much until the last few years, to produce even the proper kind of mare to cross with the Thoroughbred stallions whose services they so implicitly rely upon, the result being that Hunter-breeding has generally been a lottery, in which the number of the blanks has been far in excess of that of the prizes. Any sort of mare was promiscuously put to Thoroughbreds by enterprising farmers, who were prepared to chance their fortune; and the produce of the union was recrossed with the Thoroughbred or not just as luck would have it. This is illustrated by the statement of an elderly farmer, which is repeated by the Druid. This breeder told him that he had never produced the type of Hunter he wanted until he had put a short-legged cart mare to a Thoroughbred horse, and then had the female produce of the union served by another Thoroughbred, and this brought him what he wished to get.

The above system has no doubt been practised with varying results by many Hunter-breeders of the past, and some also of the present time. Others have set to work on different material, and have used the Thoroughbred upon all sorts of light mares from the Coach-horse downwards. It may be noticed, too, that there were "hunters" of some sort or other in England at a date prior to the period when the Thoroughbred horse as we know him became available for a cross, but it is pretty certain that

no efforts were made to perpetuate or improve the race as it then existed, and perhaps for the reason that Hunters were not required to do the same work as the modern animal of the shires.

Still, even in those early days Hunters were not without admirers; for so far back as the year 1602 Gervase Markham expresses himself as follows: "The Hunting Horse, both for his virtue, strength, goodness, and endurance, I place next to the horse of service". Markham also described at some length, and in his usually quaint style, "the three especial characters or forces by which a man shall choose a good Hunting Horse". These were: (1) his breed, (2) his colour, and (3) the shape of his lineaments. Markham, however, in spite of his professions of allegiance to breed, appears to have possessed a somewhat open mind, as he commences his observations on the subject by stating that if the horse were a bastard Jennet, or bastard Polander, he would not be amiss, that is to say if the parent on one side were English bred. He nevertheless expressed a predilection for the native article. Markham was still more catholic in his taste for colours, as bays, browns, grays, and roans were all admired by him; but he strongly objected to blacks—on superstitious grounds apparently—and chestnuts marked with white he was also opposed to. The third property upon which Markham was accustomed to base his opinions of a Hunter was shape, on which he expatiates with unusual prolixity. Briefly, the points this old writer looked for were a long, lean, large head, with a spacious, wide jowl, a short sharp ear for preference (but if these organs were long and pointed forward it was to be accepted as a sign of speed), a long and rising forehead, eyes full and round, and nostrils wide. The sort of neck Markham liked to see was the straight and firm, "as it were of one piece with the body", a strong broad chest, exceedingly short flat legs with well-knit joints, and straight upright pasterns, the hoofs being strong and yet long and narrow. Upon the question of the mane and tail, however, Markham was most emphatic, as he held that the thicker and denser the hair of these were, the greater the sign of dulness, whereas if they were thin it was a sign that the horse was possessed of spirit.

John Lawrence, whose work was published in 1809, bears testimony to the fact that a good deal of progress had somehow been made by the Hunter since the days of Gervase Markham, but the chief credit for what had been accomplished appears to have been due to Irish breeders, for he commences his observations by stating of their horses that, "The Irish are the highest and steadiest leapers in the world". Lawrence, moreover, does not show signs of being perfectly sound upon the question of Thoroughbred blood, for he prefaces his description of a Hunter by saying:

"Hunters are of all degrees of blood from the Thoroughbred to the Cart-horse. It depends on the nature of the country for which they are chosen, and still more on accident. . . . If a man desires to make a figure in a capital hunt he must provide a Thoroughbred Hunter. He must be equal to the weight of the rider, neither leggy, nor long-waisted, nor slight-boned, nor have crooked pastern joints. He should be well set upon his haunches previously to being used as a Hunter. In general a Hunter should have a good loin and spreading haunches, strong and well-knit joints, should go clear of his legs, have a good mouth, a striding gallop, and reach at least the height of 15 hands".

Eleven years later John Scott, writing in the *Sportsman's Repository*, again alludes to the superiority of the Irish horses, which he says "are renowned as leapers both standing and flying, to be attributed in some measure to their form, shape, and frigate build". He refers to the English Hunter as being "a horse between 15 and 16 hands in height from the half-bred to the Thoroughbred species, and ought to be of a lofty forehand, and shoulders well formed for action, with wide and substantial loins, moderately short legs and pasterns, and sound feet."

"Nimrod", although credited with being a first-flight man in his day, does not appear to have been so profoundly impressed by the sanctity of the Hunter as some modern authors, for he admits that a Hunter may be put to many purposes in addition to field, as he can carry a man to battle, or be used for draught. "It is therefore singular," he adds, "that out of a hundred men at covert side not half a dozen of them are on their own bred horses." This he accounted for by the uncertainty of breeding, for which it was difficult to lay down rules, but he thought the chief difficulty was to obtain the services of a good stallion; and therefore he, unlike most writers upon the Hunter, advocates a cross of Arab blood. So far, however, as he dared to go into the question of breeding Hunters "Nimrod" went, the cardinal principles that he laid down for the guidance of his readers being to observe the peculiarities of the horse and mare, and cross accordingly, a tall horse to a low mare, and so on, selecting only animals with moderate-sized carcasses, as he "never saw a very closely ribbed large-carcassed horse brilliant as a hunter". "Nimrod", moreover, appears to have been a little heretical as regards his opinions on the subject of a Hunter's head, and he expresses himself as indifferent to its size and shape, provided it is well hung on, which is important, for he states his belief that even more than the mere length of neck, the set-on of the head is connected with the heavy bearing on the hands. He considered, however, that the length of the head and neck should be proportionate; if one were long so ought the

other to be, and *vice versa*. Length of shoulders "Nimrod" was quite positive was a necessity, an oblique scapula being indispensable for up-hill and down-dale work; and though, of course, he did not like coarse shoulders, he objected to them less than straight ones. The arms he liked long, strong, and muscular, the knees broad and deep, the fetlocks of fair length and sloping, and the feet wide; chest deep, quarters lengthy, with long muscular thighs and well-placed hocks. Upon the question of action "Nimrod" had a great deal to say, being a hard-riding man, and it was only natural that he should advocate a gentle action with no dwelling about it. So far as the general appearance of his ideal Hunter went, "Nimrod", like every modern judge, preferred to see a horse appear to be smaller than he really was, for then he was sure that the animal was symmetrically built; whilst he adds that according to his experience the long-backed horses were the best brook jumpers, whilst the short-backed ones excelled over timber.

Youatt, unlike "Nimrod", was a great stickler for blood, believing that though half-bred Hunters could continue to get along, if stoutness were really wanted a hard rider should be mounted on at least three-quarter or seven-eighths bred animals. According to this writer, no Hunter should stand less than 15 or more than 16 hands at shoulder. If he were below that height Youatt considered he could "always measure the object", and if above the prescribed limit the horse was apt to be leggy and awkward at his work. In the opinion of this writer the first point to be sought for in a Hunter was lightness in hand, and therefore he, again disagreeing with "Nimrod", sought for animals with neat small heads, with thin necks, and especially those that were light on their underside. He also insisted upon broad chests, big arms, and short legs, with pasterns of fair length; whilst, though he desired that the feet should be set on straight, he would regard their being turned outwards slightly as an unimportant fault, though he would reject a Hunter that was pigeon-toed. Finally, Youatt advocates a short and compact body, and therefore is once more at variance with "Nimrod", who appears to have been tolerant of a long back.

From all that has gone before it is pretty clearly shown that the breeders of the past, so far as they were afforded opportunities, were glad to avail themselves of the services of a Thoroughbred horse for getting Hunter stock. Then, as now, it was not often that a clean-bred animal was to be found up to more than 13 stone. The consensus of opinion that has been expressed in favour of the Thoroughbred as a Hunter sire, both by past and present writers, renders it impossible to expect that the day is yet at hand when Hunters shall exist as a

distinct variety having the faculty of reproducing themselves; and the idea has been well-nigh abandoned of attempting to establish a class of Thoroughbred animals up to greater weight than the half-bred horses now available for men who ride to hounds. Whether this is practicable, experience alone can show, but unquestionably a move is being made in the direction of the prevailing practice of sending mares to Thoroughbred sires, and again repeating the process with the fillies that are thus obtained. The results of the second cross are again sent to Thoroughbreds, and so it may be continued until the foals are, virtually speaking, themselves Thoroughbreds, though whether they will have retained the substance of the original dam, together with the bone and size which she may have possessed, is a question which can only be replied to when the experiment has been worked out. The rooted antipathy which exists in many quarters to the half-bred stallion affords a very probable cause for believing that the manufacture of a breed of weight-carrying Hunters would not be an exceptionally difficult task; but until the prejudice against the half-breds subsides breeders who are trying to raise animals for sale, and cannot therefore afford to offend the susceptibilities of their patrons, may be excused if they decline to digress from the beaten track that has been traversed by their predecessors for generations. No doubt, too, the course adopted by the Royal Commissioners, who are entrusted with the distribution of the money voted for the King's Premiums, has exercised a very decided influence upon the feelings of the public. According to the practice of, and rules laid down by, the Commissioners, the premiums are only divided amongst Thoroughbred stallions which are considered to be suited for serving half-bred mares and breeding Hunters therefrom, but whether the conditions go far enough or the reverse is a point upon which opinions differ very materially. To commence with, the judges are not informed of the pedigrees or performances of the competitors for these premiums, and as many of the horses are either non-stayers themselves, or descendants of such, it is a debatable point whether they are likely to instil stamina into their offspring. Secondly, as the selection of the districts in which the horses are to travel for the season is left to their owners, and the competitors are grouped in classes accordingly, it naturally follows that many a fine stallion, which happens to have the bad luck to compete in a strong class, fails to gain a prize, and his services are thereby lost to breeders in other districts, whereas, had he been entered in another class, he might have won easily, and would thereby have done much better public service during the succeeding season than the horses that were awarded premiums in that class. It appears therefore that the

money devoted to the King's premiums would be much better applied if the judges were to select the horses that were to travel each district from the whole of the competitors, and not class by class, as there would then be increased prospects of having the money distributed among all the best animals, which would be a distinct benefit to the breeders of horses. Besides this, it is quite possible, under the existing order of things, for a stallion to be given a premium as a sire to travel a district for which he is totally unadapted by his shape, size, make, and breeding. Thus a small-bred, little horse may be selected to serve mares in a pony-breeding part of the country, or a big coarse one in a district where the mares require quality put upon them. Consequently it is certain that the King's premiums would accomplish more good if the judges were empowered to select the stallions which in their opinion were best calculated to serve in each particular part of the country.

The desirability or the reverse of introducing the Arab cross into Hunters is one that has often been debated. No doubt the reputation of the Arabs was considerably affected by the ignominious figure they cut at Newmarket some years ago, when they finished behind some very moderate Thoroughbreds over a distance of ground; but under any circumstances it is difficult to see in what respect the Arab is superior to the English horse, provided that the latter is carefully selected for the purposes of a Hunter-breeder, and therefore if a sire has to be found to cross with half-bred mares, it surely would be safer to cross with an animal that has been a good performer himself, or else comes of running and of staying blood. The latter qualification is probably more powerful than the former, but it too frequently happens that horses which have passed through a long turf career come down to the level of a Hunter sire only because they lack the quality of endurance. It is also quite possible that a good performer on the course may be found to be incapable of begetting race-horses, although his offspring may be quite fast enough for work across country. A second objection that is not infrequently raised against using horses that have done much work upon the turf for Hunter-breeding is, that these animals have been forced from a very early age, and have been generally subjected to conditions of life which are likely to have impaired their energies for begetting staying stock that are capable of carrying weight to hounds, and lasting out a long day beneath it. A considerable time ago, as the history of the turf informs us, the Thoroughbred of the period had to run over long courses under welter weights and in heats, and in fact was subjected to treatment that their descendants of the present day could not stand. Such animals were far more likely to produce Hunters than the modern race-horse;

and therefore it once more may be suggested that as the Thoroughbred is accepted as indispensable to Hunter-breeders, all the more care should be exercised by the breeders of weight-carrying Hunters in selecting a stallion that can stay.

So much space having been given to the selection of a Hunter sire the question of the mare may now be considered, for after all there can be no denying the fact that she plays a very prominent part in the production of a Hunter. The latter is, however, very frequently the offspring of quite a haphazard cross, between a mare of a heavy or light breed as the case may be, and the first available stallion, regardless of merit either in respect to pedigree or performances. But this method of breeding is merely groping in the dark. It is impossible to expect business men to embark in such an undertaking as raising Hunters as an enterprise with nothing but their luck to influence the results. For farmers it may do very well, for they possess the mares, and can work them very nearly up to their time of foaling and soon after it, so there is not much time wasted, and if the youngster proves a misfit there is but little loss over the transaction. If, on the other hand, Hunter-breeders can be induced to act upon the advice of the Hunters' Improvement Society, a great step might be made in rendering their enterprise more reliable; for even if, failing an established breed of Hunters, it is admitted that the Thoroughbred as a sire is essential for the production of a Hunter, it is the fashion that the mare should be half or three-parts bred. Consequently, it is not only possible, but probable, that any breeder who pays due regard to the individual merit of his mares, and ascertains their pedigrees before he buys them, may reasonably anticipate that his results will be more satisfactory than if he crossed the clean-bred horse indiscriminately with any sort of mare, and chanced the rest. Cart blood may, moreover, be a capital thing in its way—that is to say, it is satisfactory enough if a farmer's mare flukes a good stamp of weight-carrier to a horse that happens to suit her—but how about the offspring of the union if a filly? The ancient breeder referred to above, who told "the Druid" that he had never produced the sort of Hunter he wanted to breed until he crossed a cart mare with a Thoroughbred and their filly foal back again to the clean-bred animal, was no doubt a lucky man to get what he required in two crosses, but it is not recorded that he did so a second time. Unquestionably the prepotency of the Thoroughbred is great, but this circumstance gives no guarantee that the cart blood will not assert itself, and until a breeder provides himself with a stud of mares that possess some good back-breeding for several generations he must expect some disappointments as the result.

The task of breeding a heavy-weight Hunter is a very much more difficult one than the production of a light-weight animal, and the cross-country men who are not troubled by superfluous flesh or bone can mount themselves, if they please, on Thoroughbreds or cross-bred animals for, comparatively speaking, small amounts. This being the case, it is naturally the ambition of every breeder, whose ulterior object is the sale of his young stock, to produce a weight carrier, and consequently the raising of light-weight horses is seldom seriously attempted, except by amateurs who breed for their own requirements and not for market. Size, in addition to power, stamina, and action, is a great desideratum in any Hunter, for a big horse possesses the charm of making the fences look smaller than they really are, and *vice versâ*, and therefore a little horse will not command the price that would be given for a bigger one, however clever he may look or be. At the same time it must be noted that the quality of a weight carrier is usually in inverse ratio to his strength and stature.

There is no valid reason for preferring a great clumsy mare to a symmetrically built one for a cross with the Thoroughbred when it is desired to produce a Hunter—in fact, the less coarseness she possesses the better are the chances in the lottery—but still she must have bone and size. If weedy, it would be too much to expect her to throw a weight-carrier; whilst if coarse, the foal will very probably be pronounced too common for a Hunter, and be condemned to a life of slavery between the shafts. A bit of breeding somewhere is, of course, essential to a mare from which it is hoped to breed a foal possessed of quality, and a good-girthed, big-quartered, short-legged one will most commend itself to the practical breeder as the sort to go for. In process of time the *Stud-book* of the Hunters' Improvement Society, if it does not degenerate to all intents and purposes into a replica of the *General Stud-book*, will be accepted by breeders as an invaluable guide in the selection of their horses, both for work and breeding purposes; but rapid as has been the progress of the volume, it must take many years before it can assume the proportions of a reliable guide to Hunter-raisers generally. Only one foal a year at best can be expected from a mare, and therefore the progress of building up foundation stock must be slow; but meanwhile a work of reference of inestimable value to the Hunter-breeder is being steadily compiled, and this volume, in course of time, must become a most reliable source of information regarding Hunter mares. It is highly probable that a mare which herself has proved a valuable Huntress will produce a foal of merit; but whilst fully accepting the theory of the poet Horace, who mentioned that *Fortes creantur fortibus et bonis*, it does not invariably follow that a clever Huntress will produce a saleable foal, let alone

a weight-carrier. Still, the produce of really good mares is usually good in turn, but unfortunately the supply of high-class matrons is limited and with difficulty obtained.

There is yet another point in connection with the breeding of Hunters which must be considered, and this is that the same class of horse is not required for every hunting county in England. This circumstance is a very fortunate one both for breeders and sportsmen, as in the first case there is a more elastic market in which to dispose of their horses, and in the second the demand for any particular class of animal is restricted to those who hunt in a particular district. At the same time it is essential that every Hunter should gallop and be safe and quick at his fences. Size, as has already been pointed out, is a most important quality, and so of course is action, but there are men who, provided their mount possesses the other attributes of a good Hunter, are so happily constituted as to be disposed to give way a little on the subject of action if only they feel satisfied that their horse will carry them to the end of a run. It must not, however, be imagined that action is not a great point in the Hunter, for it is, and a horse that is deficient in this respect is never likely to command a high figure. He must possess freedom at the shoulder and a knack of bending his hocks above all things, as, if he fails in these points, it will not be at all likely that he can see the end of a long run beneath a welter weight, whilst, so far as his rider's comfort is concerned, a good shoulder action in his mount is a blessing which all horsemen must appreciate.

The appearance of a Hunter must naturally conform to the work that he is expected to perform, and the animal that is expected to carry a welter weight over a stiff country is, of course, different in shape and make from the horse which is required to gallop under a less severe burden. At the same time there are several points which all Hunters must possess in common, for they are all required to stay and jump, and therefore the chest should be deep enough and wide enough to provide ample accommodation for the heart and lungs, whilst the quarters and thighs must be big and powerful. Nor can the importance of good legs and feet be overestimated. An animal that is bad upon his fore-legs is always an unreliable mount. This fact has been recognized by most people from time immemorial, and amongst the older writers none was more emphatic in his denunciations of indifferent fore-legs than the Duke of Newcastle, who wrote in 1667. He states as follows: "Some say if a horse have a great head, and thick neck and fleshy shoulders, that he is hard on the hand. You must know, that if he have any imperfection in his leggs or feet, but especiall before, the horse must be hard on hand; for he leans on the hand to ease the grief of his leggs, as gouty man doth use his staff. And let him be finely

shap't or ill shap't, if he have any imperfection in his leggs, he must be hard on the hand." The secondary importance which was attached by the Duke of Newcastle to the head of a Hunter will scarcely be in accordance with the opinions of modern experts, who for the most part are greatly influenced in their selection of an animal by the opinion they form of this portion of his anatomy, a refined-looking intelligent head being regarded by most hunting men as a *sine qua non* in the composition of the horse that has to carry them. The subjoined description of a Hunter that may be expected to find favour with hunting men of all degrees may be offered for the guidance of the reader.

The head should be small, lean, and bear an intelligent expression; it should be fairly wide at the jowl, and taper gradually towards the muzzle, which should be of a good size. The forehead is broad, the eyes rather full and soft, and the ears small and nicely carried. The setting on of the neck is an important point, for if the head meets it at a sharp angle, not only is an awkward appearance the result, but the horse loses a considerable amount of his natural power to recover himself if he makes a mistake; whereas if he possesses a head set gracefully on his neck in a gentle curve in the throat, he is capable of greater activity in moving it suddenly upon an emergency, and thereby may save his rider a fall. The neck itself should be lean, though muscular, quite free from lumber, slightly arched and increasing in size until it reaches the shoulders, a coarse heavy neck being a very bad fault in a Hunter. The shoulders themselves should be long and sloping, well laid back at the withers, which in turn should be well raised but fine, most judges, though not all, being opposed to wide withers. His chest should be both broad, flat, and deep, so that the girths are well behind the forearms, whilst the forearms should be long and muscular, with big deep knees, and plenty of good sound flat bone and wiry sinews below them. The canons should be short from knee to fetlock, and the pasterns of fair length and sloping. The middle piece must be very powerful, with well-sprung ribs, strong loins, and a big flat back. The hips should be wide, and the quarters very long, level, and powerful, with deep and very muscular thighs, big clean hocks, and a considerable amount of vein below them. The tail must not be set on too low, or else the horse will present a goose-rumped appearance, which, in addition to being an eyesore, will convey to many minds the impression that the animal is descended from common stock. The feet should be large, and of course perfectly sound and symmetrical, dark in colour, with a rather high heel, healthy frog, and thick soles. In general appearance, therefore, the Hunter may be described as being an intelligent-looking, short-legged horse, possessed of great power behind, and an ability to carry the weight

required of him through a long day. Regarding the action of a Hunter, all that need be said is that galloping and walking are the two most useful gaits that he can possess. When fully extended his gallop should be smooth, without any disposition to fight about it, but rather of the low creeping order; and of course the faster he is the better. An ability to trot, too, with ease to his rider is, of course, an additional and a valuable attribute, for it usually happens that this mode of progression is resorted to in the journey to and from the meet; but it is not every galloper that can trot, and after all the former is far the more important action in a Hunter. A horse of this description that can walk well is, of course, an animal for selection over one that cannot, as the rider of a tired Hunter which cannot step out is not to be envied when he has to make his way home on a strange road and in the dark. There can be no two opinions upon the question of temper in a Hunter, as an awkward headstrong animal, let alone a vicious one, is always a danger to his rider and the rest of the field. Finally, the manners of the perfect Hunter must be exceptionally good, his mouth should be light, his intelligence great, and while possessing courage, he should be steady and tractable, with his heart in the right place. A puller will soon wear down the strength of his rider, whereas a horse with manners will carry him without demanding half the expenditure of energy and trouble to keep him straight.

Briefly speaking, therefore, a Hunter, for whatever purposes he may be required, should possess—

First, the best of legs and feet.

Second, action, strength, and courage.

Third, long sloping shoulders, without which the action will not be there.

Fourth, powerful quarters and big muscular back-legs.

Fifth, a neat intelligent head.

Sixth, a deep chest, and a flat and not too short back.

Some points of a Hunter were briefly epitomized by Whyte Melville as follows:—

> "A head like a snake, and a skin like a mouse,
> An eye like a woman's, bright, gentle, and brown,
> With loins and a back that would carry a house,
> And quarters to lift him right over a town".

With every word of the above all hunting men will cordially agree, their principal regret being, no doubt, that the gifted author did not still further extend his poetical description of a very valuable class of horse.

The Saddle Horse.—Having referred to the various distinct breeds

of horses which are recognized in England, it is desirable that a short space should be devoted to the Saddle horse—not necessarily as regards his breeding, but so far as his structural development and qualities are concerned. In so far as a breed of Saddle horses is concerned, there is nothing of the sort in this country, though in America breeders have made one.

In the first place, perhaps the most essential point of all is to secure good manners, as no matter how excellent a Hack may be in other ways, he will never be a safe, whilst he will often be a very dangerous, ride, if through vice, bad breaking, or some other cause, he is not to be depended upon to answer his bit, or be easily controlled by the slightest touch of the rein. After manners the question of shoulders in the riding-horse is a subject for the gravest consideration of those who have to judge him, as a short-, straight-, or heavy-shouldered animal can never be expected to move at any of his paces as smoothly as one whose shoulders are long, obliquely placed, and free from lumber. "No shoulder no saddle horse", is an expression made use of by a hard-riding and practical Yorkshire gentleman, who most truthfully maintains that no matter how good a Hack's legs and feet may be, if his shoulders are faulty he will be a sorry mount for anyone. Of course it would be most foolish to ignore the importance of the legs and feet of a Hack or any other horse, and so it should be a subject of care to a judge to note that the arms of the animal he is looking over are big, the knees large and properly placed—not standing back or over—the bone between them and the pasterns short and flat, with nice springy sloping pasterns terminating in sound, properly-shaped feet. The importance of a good pastern is great when the horse is to be used for saddle work, as if the pasterns are too short or straight the animal is not so well calculated to preserve his balance if he stumbles, whilst he will certainly be a rough-actioned Hack.

The head of the typical Hack should be breedy-looking and small, with neat ears, fair-sized eyes—a pig eye looks very objectionable through a bridle—and an elegant muzzle with large nostrils, the jowl being moderately deep, but in no respects heavy, and the forehead wide. This sort of head, if set upon a delicate and slightly arched neck, which widens as it nears the shoulders, is always attractive; and it must be borne in mind that a short, thick, heavy neck is an abomination in a Hack.

The withers should be fairly high, and, like the shoulders, sloping, so as to assist in keeping the saddle in its place. There should be a nice depth of chest, but at this point extreme width is not required.

The back should be neither long, weak, nor dipped, but there must at the same time be plenty of room to carry the saddle and leave a reasonable amount of space behind. The Hack should be well ribbed up, and possess nice long straight quarters, as, if the latter are short or slope, they are a great eyesore to judges; a weak quarter is a very serious defect.

The hind-legs should be nicely bent at the stifles with a good length of bone down to the hocks, and short thence to the ground, the pasterns, though not so long and sloping as those of the fore-legs, being lengthy enough to ensure elasticity of action, whilst the feet must, of course, be sound and healthy. The tail is set on rather high, and is not usually docked short in a Hack, but neatly squared. The hocks should be large, free from all blemish, and so placed that they are neither so close together nor so wide apart as to prove a source of weakness to the horse, which they will if either of these defects is present.

The action of the Park Hack should be free, well-timed, and elastic, his principal paces being the walk and the canter; he is rarely required either to trot or gallop, and any approach to a high fighting style of going is very strongly to be deprecated. A horse which creeps along, as it were, over the ground with a smooth easy canter will always command attention, whilst a fast level walker is almost always as much admired. It is remarkable to notice how often the walking action of a Hack is neglected by judges and purchasers of this class of horse; but the discomfort and danger of riding an animal which is an awkward walker are both so apparent, that in selecting a Saddle horse his style of going at this gait should be closely studied. The important subject of manners may also be regarded as including action within its scope, for no horse which does not move smoothly and answer its bit and its rider's knee, can ever be expected to possess the perfect manners which are so inseparably associated with the true type of riding horse.

The great points, therefore, to be sought for in a Hack are manners, which includes mouth and freedom from vice; action, which is invariably associated with good shoulders and limbs; and elegance of form, in other words, quality—a trio of properties which it is not easy to combine in any one animal; and hence the great value of a perfect Saddle horse.

How to produce this much-sought-after class of animal is a subject which causes breeders a great deal of anxious thought, but it is the prevailing belief, founded upon experience, that as a rule the beau ideal Park Hack should possess a great deal of Thoroughbred in his composition, even if he is not perfectly clean-bred himself. The possession of this blood will almost certainly ensure a fine neat head, and the right sort of shoulder, though in the latter point Thoroughbreds differ like every

other horse, some being far superior to others. It not infrequently occurs, however, that a blood-horse is much too high-couraged for a timid rider, who consequently seeks for an equally good-actioned but steadier mount. To such the advantages of an Arab cross may be suggested, for although the Eastern breeds are decried by many authorities, there can be no disputing the fact that, in spite of their not uncommon tendency to be faulty in shoulder, the Arabs are usually very excellent Hacks, provided they are given a fair chance to do their merits justice. They certainly put good heads upon their offspring, whilst their docility is great, so that although their action may not invariably be so imposing as might be desired, they will, if judiciously crossed, throw most excellent Saddle horses, whilst in their pure state they can carry a lady or boy very comfortably and well. The style, too, in which an Arab will come up to his bit, and change his legs as often as desired, is worthy of all the praise that can be bestowed upon any horse; and therefore to this breed and the Thoroughbred the would-be breeder of a Park Hack may look when seeking a cross for suitable mares.

Weight-carrying Saddle horses of the stamp which is sought for by elderly gentlemen of considerable bulk are naturally built on far more substantial lines than the Park Hack. They must also be heavier in bone and the possessors of irreproachable decorum; but valuable though they be, the art of producing this class of horse has hitherto remained a mystery, the appearance of a weight-carrying cob being usually a matter of chance, though possibly the crossing of an Arab and a powerful Hunter mare might produce the animal required.

For Covert Hacks a dash of Thoroughbred blood is most desirable, as the duties of these horses are so varied, and their work is often of so arduous a nature, that high courage combined with manners and style are chiefly desired by those who use them. Many an excellent Covert Hack has been the offspring of a blood-horse and a pony mare, or *vice versa*, and it is from such sources that the best of them are most likely to spring.

The Harness Horse.—The formation of the ideal Harness horse is naturally very different from that of the Park Hack, or even the ordinary Saddle horse, one at least of the most difficult points to secure in the latter—long, sloping, well-placed shoulders—not being so essential to perfection in the case of a Harness horse. This stamp of animal should be long and low and stand over a great deal of ground. His loins should be powerful, and his quarters lengthy and level, with muscular thighs and broad, flat, well-placed hocks. A sour head is seldom associated with good in any horse, as it usually betokens a sullen or vicious temperament, which

is shunned by driving men, whilst a heavy head and a dull expression generally accompanies a soft, cowardly disposition, which prevents its possessor from struggling on under difficulties, as many Harness horses are called upon to do.

The neck of a Harness horse should not be short or heavy, as both these faults are apt to make him clumsy, a defect which is prejudicial to the merits of any horse. His neck, too, should be firmly placed on his shoulders, which need not necessarily be so oblique as those of the Saddle horse, nor is it imperative that the withers should lie so far back. Indeed, many persons advocate a moderately straight shoulder in the Harness class of animal, being of the opinion that such a formation more readily adapts itself to the collar, but in this respect, as in all others, it is no difficult thing to go too far, as coarse shoulders not only are liable to injure action, but detract very much from the appearance of any horse. Big forearms, with plenty of length above the knee, and short from this joint downwards, with broad flat canon-bones, are very desirable features for a Harness horse to possess, whilst the pasterns should slope, and the feet all round be of good size, well formed, and of course sound. Considerable depth and fair breadth of chest should also be present, so that whilst the speed and "handiness" of the animal are not affected, there may be plenty of room for the play of both heart and lungs.

It is not absolutely necessary that the back of a Harness horse should be as level as that of a Hack, as he is not required to carry any considerable weight upon it; but a distinctly hollow or dipped back is a great eyesore, and should always be avoided when possible, though a really good animal in other respects need not be discarded if his back happens to be hollow. Neither is a badly ribbed-up middle piece or a slack loin a fatal defect, though any signs of weakness, such as these, depreciate the value of an animal and detract from his appearance. On the other hand, the importance of good quarters can scarcely be overestimated, as a horse which is cramped here is naturally placed at a disadvantage for harness work; whilst good thighs and hocks are quite essential to him. The stifle joints should be nicely bent—but not too much so—and there should be plenty of length of limb between them and the hocks, which in turn should be large and powerful, and of course quite clean and free from blemish. A capped hock, let it be mentioned, though an unsightly disfigurement, does not of a necessity betoken unsoundness or an incapacity for work, and therefore need not entail the discarding of an otherwise good horse, provided he is passed sound in other respects; but they are always better avoided if possible, if only on account of their ugly appearance. There should not be too much of a bend at the hocks; "sickle hocks" are very often associated sooner or later with

weakness, and they should be well placed, not being carried outward below the line of the body or inwards according to the conformation known as "cow hocks". The tail should be set on high, as must be the case when the quarters are level, for though plenty of "goose-rumped" horses are good workmen, a drooping quarter never adds to the appearance of any animal.

The question of manners in a Harness horse is a matter of great importance, as an animal with a naturally bad mouth, or one which has been ruined by injudicious breaking or heavy hands, to say nothing of a vicious or timid dispositioned one, is always an unsatisfactory and very often a dangerous horse to drive. Very frequently, of course, the manners of a horse become affected by bad bitting, and consequently in trying a recent purchase of which nothing is known it would be unwise to discard him, if not at first satisfactory, until the peculiarities of his mouth have been carefully studied. Indeed it may safely be asserted that as many equine tempers have been ruined, and manners spoiled, by injudicious bitting as by any other means, and therefore in forming an estimation of a strange horse's manners, it is always necessary to pay attention to his mouth. Again, the question of manners is so often associated with temper that no one is ever justified in ignoring the character an animal may possess. Some animals entertain peculiar aversions to certain objects which they may possibly encounter when being tried, and although they may be steady enough under any other circumstances, may earn for themselves a bad reputation amongst strangers. A bolter, however, and particularly one whose eyesight is at all affected, is never to be trusted, for if a horse once decidedly gains the upper hand over his driver, he rarely forgets his power, and is therefore liable to repeat the outbreak at any moment.

Action and style are two points about a Harness horse which are absolutely essential to success in the show ring, or inclusion in the category of valuable animals. Unfortunately, however, they are both difficult to secure, nor are they always associated with each other. Yet they must be there if a horse is to be accepted as a good one, for no matter how perfect his formation may be, or how well he moves, he will go down before a good judge if he does not carry his two ends up; whilst if he accomplishes this and is deficient in action his other merits will all be overlooked. To commence with, a good Harness horse should hold his head up proudly as it were, and not be dependent upon a bridoon bit for keeping it in position; but, on the other hand, a "star-gazer" which throws his head-piece back as if he were taking an observation of the sky is never an animal to be admired, and not infrequently is an awkward horse to drive. When it is noticed, therefore, that a Harness horse is driven in a martingale, it is as well to try and ascertain how he carries his head without one; whilst, on the

other hand, it may be mentioned that it is no unusual thing for animals to be shown off with the reins attached to the bridoon bits in their mouths, instead of to the other bits which are merely added for the sake of appearance.

The action of a Harness horse is necessarily a most important part of his composition, as an imposing show is the object most sought after by both judges and purchasers. A considerable difference of opinion however exists regarding what is required, though in all cases lofty knee action is insisted upon. Many high movers, however, appear to be incapable of doing anything except bending their knees, and such animals usually possess an evil propensity for smashing their fore-feet down in almost the same place from which they raised them, and leaving their hind-legs behind them, after a fashion which is simply distressing to a lover of real action. Still, such horses can win prizes under some judges, but this fact does not necessarily prove that their style of moving is at all in conformity with the ideas of practical men who really understand what action is. In the first place, a Harness horse should use his shoulders and pasterns as well as his knees, for when he can do so he possesses an ability to "get away" which the shoulder-tied high knee-actioned animal can never hope to do; whilst if he does not flex his hocks and tuck his hind-legs well under him, the smoothness of his going, to say nothing of the dash which is so characteristic of a good Harness horse, will be entirely absent. In short, there should be plenty of power and fire about the going of this class of animal, and this there never will be if he does not move from the hocks, which should convey the appearance of propelling his body forwards, as indeed they should do.

Having thus endeavoured to describe the leading points to be sought after in a high-class Harness horse, it may perhaps be desirable to offer a few suggestions upon how to produce the sort of animal which is wanted. There are, however, in existence at the present time, as has been shown in the foregoing pages, at least three English varieties—the Hackney, the Cleveland Bay, and the Yorkshire Coach-horse—which in their pure and unadulterated state should between them be able to supply the requirements of most seekers after a high-class Harness horse. It not infrequently happens, however, that a buyer is anxious to combine the brilliant action possessed by the Hackney with greater size than that breed usually attains, and in such instances a cross with a Cleveland Bay mare may be the means of securing what is wanted, though the plainness which is so frequently associated with the latter breed may possibly provide a disappointment. The fact that the Yorkshire Coach-horse is the result of a Thoroughbred and Cleveland Bay cross, however, does not commend the Coach-horse as a desirable cross for the Cleveland Bay; but many most

brilliant-actioned and sizeable horses have been produced from the Coacher and the Hackney.

Assuming that action and not great stature is required, the introduction of Hackney blood, provided always that the stallion used is Hackney-bred, and not therefore the possessor of a strain of alien blood either Thoroughbred or otherwise, is morally certain to produce what is required, though, of course, if the mare is hopelessly bad, or else is bred in such a way that her blood will not "nick" with that of the sire, a disappointment is likely to result. All things being equal, however, it may safely be expected that the old and true type of Hackney will provide his stock with action all round, a good middle piece, and short, flat legs; whilst the Cleveland Bay will produce an increase of size, though if bred to underbred mares his offspring will probably be very plain. At the present time, a large number of American Roadster mares are being imported into this country, but the greatest care should be exercised in breeding from them, as, excellent though their style and manners may be, it should always be remembered that the horses on the other side of the Atlantic possess a tendency to be light in barrel and bone, and so if not bred to the right sort of horse are likely to throw back to a weedy ancestor. Still, these should throw something very good to an old-fashioned short-legged, heavy-boned Hackney.

Of the heavy breeds of draught-horse, the Suffolk undoubtedly is to be regarded as providing the greatest field for valuable Harness crosses, and if bred to the Thoroughbred or Arab, and then to the Hackney, it is very possible that a good stylish Harness horse might be produced, though the majority would be more likely to be of the Vanner type. The first crosses with either of the above varieties produce some extremely useful animals, but as a rule these cannot be expected to possess the brilliancy of action and the breediness which are associated with the highest class of Harness horse, such as has been described above.

PONIES AND PONY-BREEDING

As many writers have truthfully observed, the first difficulty that confronts a person who is attempting to describe a pony is the diversity of opinions which exist upon the subject of the description. An animal that is regarded as a Pony in one part of the country is styled a Cob in another, the inhabitants of one district possessing very different ideas upon the qualifying height from those entertained by the residents in another. Then again these little horses appear in such different forms, that a description which holds good for one variety would not apply in the least to another, the truth being that ponies are as varied in

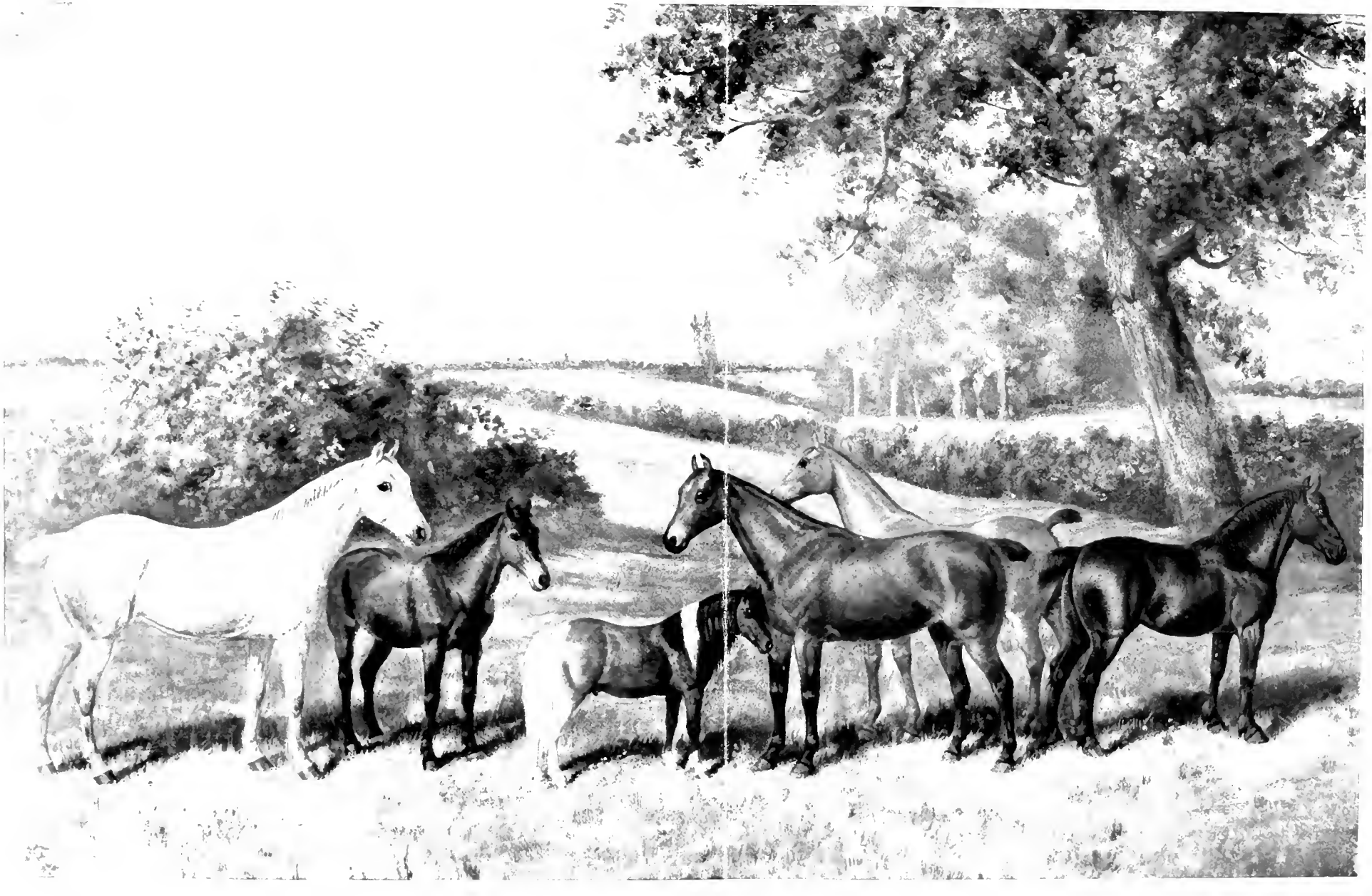
their character and conformation as they are in their adaptation to different purposes.

The public, however, or at all events a very considerable number of persons, ignore this fact entirely, and though they readily distinguish between the different varieties of large horses, they are very prone to regard anything below a certain height, fixed by themselves, as merely a pony, and unworthy of that careful division and classification which has been adopted with such good results towards kindred varieties. This, of course, is altogether wrong, for the equine bantams exist in quite as many varieties as the bigger horses.

This being so, the consideration of the varieties of the pony becomes extremely difficult, for not only do representatives of old-established breeds appear in strong numbers in some parts of the country, but cross-bred and manufactured animals are still more numerous, the result being that breeding ponies to any particular type or ideal standard is a great lottery, though unquestionably profitable. There is no doubt that the pony is to a certain extent the survivor of the old English horse which was possessed by the ancient Britons, as there is ample evidence to show that the equine race in those early days was far smaller than now. The increase in size in our general horse stock is a natural result of scientific breeding and attention to the feeding and general welfare of brood stock. Civilization encourages the domestication of animals, and domestication ensures an increased development of frame, and therefore, even were evidence not at hand to prove the fact, it is beyond all doubt that the horses of the Britons were very little taller than many so-called ponies of the present day, though undoubtedly they were stronger in build.

There appears, however, to have been a desire from the very first to increase the size as well as to improve the quality of the native pony, as, in addition to crossing these animals with others which had been imported from abroad, several rigorous laws were made and enforced against the practice of permitting undersized stallions to run on common land with breeding mares and fillies. These restrictions very naturally contributed to the quasi-extinction of the old-fashioned pony, though it must at the same time be remembered that many long-established breeds still exist in various localities, and that although it is quite possible that their type has a good deal changed, still enough remains behind to connect many of them with their lost ancestors.

No doubt the principal difficulty that pony-breeders have to contend against is the tendency to increase of size amongst their stock. Improvements in regard to shape and make are, comparatively speaking, easy,



A GROUP OF FOALS

but it is the propensity to add inches to his stature that makes a pony a difficult animal to produce. All horses which are reared in luxury are prone to grow and spread, as has been observed before, and consequently pony-breeders have discovered that it is necessary for them to adopt rigorous measures with their studs. To commence with, it is not a judicious act to attempt raising ponies on good land where the keep is plentiful and very nourishing in quality. A pony from his earliest youth should be compelled to live on poor land, and in fact to go short of commons, if the size is to be kept down to the required standard. Of course, this rule cannot be made to apply to ponies which are in work, but even in the case of these overfeeding is most undesirable. It may be pointed out that ponies are naturally small feeders, though an artificially large appetite can always be produced by treating them to a too liberal diet. The fact that ponies can be more satisfactorily reared on sterile than on rich land is in itself a direct encouragement to persons who own, or who can acquire a lease of, mountainous or moorland ground, to try their fortunes as breeders, and certainly to the man who possesses patience, and can afford to wait, an enterprise of this description should turn out a complete pecuniary success. Not only is such land comparatively speaking worthless at the present time, but the cost of attending upon the stock and feeding them is very small. The value of their winter keep cannot possibly amount to more than a trifle, and the quarters required for the brood stock during the more inclement seasons of the year may be of the most primitive kind. The chief aim, in fact, of pony-breeders should be to bring their stock up hardy and to encourage the survival of the fittest, so that these little horses may continue to possess what they now enjoy, the most robust constitutions of any variety of the equine race. In fact, in their case health and soundness appear to exist in direct ratio to their diminution of size; hence an infirm pony is comparatively seldom met with.

In addition to short commons and outdoor life on the mountain-side there is another important requirement, viz. to arrange the breeding operations so that the foals shall be dropped late in the season. This of course is reversing the ordinary practice of horse-raisers, but it will be readily seen that the very motives which require that breeders of large animals shall procure early foals, are those which induce pony men to breed late ones. When the young animal finds a quantity of rich keep at hand he naturally feeds himself well, and proceeds to spread out and extend his lines in all directions; whereas, if his growth is not forced on at first, and there is not an over-abundant supply of food for him, as his age advances he will naturally become stunted, and this is

exactly what his owner wants. A foal dropped in the early spring gets all the best of the grass, and so does his dam, with the result that her milk is richer and more plentiful than it need be; whereas one which comes later on in the season obtains less luxuriant fare, and with beneficial results so far as the intentions of his owner are concerned. That all horses can stand cold and privations fairly well is an accepted fact, but it is equally true that there is in this respect, as in all others, a limit to their powers of endurance. The colder the latitude in which he resides the smaller in stature he will be; therefore it may once more be suggested for the guidance of pony-breeders that the three cardinal points of their creed should be a cool mountainous climate, a sufficient though not over-liberal supply of food, and late foals.

There is, however, another and a very important subject to be discussed in connection with the raising of ponies, and that is the desirability or otherwise of practising a system of close breeding. That "sibbing" has been most successfully practised by the leading pony-breeders of the day is incapable of being disputed, and certainly Mr. Christopher Wilson of Kirkby-Lonsdale carried this practice to an extreme which was absolutely daring in the case of the well-known pony stallion Sir George, whose victories at the Royal Agricultural Society's shows were so frequent as to become almost monotonous. Mr. Wilson bred Sir George to a daughter of the little horse, and then again to the female offspring of this union, repeating the experiment a third time, and yet he not only lost nothing by doing so, but actually gained immeasurably, as in this way he produced one of the very finest pony mares that ever looked through a bridle. Strange to say, too, he did not lose any bone nor an ounce of strength; on the contrary, the mare in question was bigger below the knee, and as sound in constitution as any member of his stud. Having regard to Mr. Wilson's experiences, it can scarcely be contended that in-and-in breeding, so far as ponies are concerned at all events, is a bad policy if judiciously carried out, and doubtless the system will be found necessary in order to impress type and keep down size. In inbreeding, however, as in everything else, there is a limit that must be reached sooner or later, and breeders who adopt such methods must always be on the look-out for evidences of deterioration in stamina and constitution amongst their stock. One can scarcely avoid suggesting, moreover, that it is quite possible that some particular animals or some strains may be more peculiarly adapted for the purposes of inbreeding than others; and here again is a possible danger on which the attention of breeders must be fixed in carrying out their crossing experiments. It is obvious, too, that any sire which may be selected for inbreeding purposes should not only possess a strong

constitution and be absolutely sound, but must also be as near perfection in his looks as can be secured. Weaknesses and faults, it must be remembered, are as likely to be perpetuated as are the best and most attractive points, and when imperfections are strongly rooted in a strain of horses they are most difficult to eradicate. Of course, the value of an inbred animal—provided always that he or she, as the case may be, is sound and good-looking—as a stock pony is immense, and a breeder possessing such an article may seek for an outside cross with some degree of confidence, knowing that at all events on one side there is good material to work upon. In ponies, however, as in all other stock, a male will oftentimes nick with one female and not with another, and *vice versa*; and therefore the breeder who may fail at first will not be acting wisely if he at once makes up his mind that his sire or mare is worthless, because their first foal turns out to be a disappointment.

The effect of a suitable sire upon common pony mares is extraordinary, and the rapidity with which a strain has been improved by the influence of a desirable stallion in the stud has upon many occasions been noted with astonishment, and even by those best acquainted with the history of the mares. This is a most satisfactory circumstance, for beyond a doubt many valuable strains or varieties of pony have been so long neglected as to render their owners sceptical as regards the possibility of improvement. Experience, however, has so amply proved the contrary that no one who is associated with the raising of this class of stock should permit his mares to run with a moderate stallion. A difficulty, however, exists in selecting the horse pony to run on common land on which mares of many and varied types are kept, for an animal that will suit some may fail with others, but there is always safety in following blood. A good-constitutioned Thoroughbred pony is sure to leave good results behind him, and may be safely used to any class of mare; and in such cases as those in which owners are either unable or unwilling to provide separate accommodation for such mares as may not be quite adapted to the stallion running with the drove, he is not likely to do them more harm than many horses which are permitted to be at large on common ground. It is the indifferent typeless class of horse that has done so much harm to ponies generally, and it would be an excellent thing if a law were passed that no stallions should be allowed to run at large amongst mares on public land unless they had previously received a licence to do so; and surely no man is justified in enforcing his legal rights to the detriment of the property of other persons possessing similar privileges.

Having thus attempted to explain the principles which have influenced the operations of the most eminent pony-breeders of the day, it now

becomes necessary to enlighten our readers as to what a pony really is. The differences of opinion which have existed in different parts of the country as to the necessary stature that qualifies its possessor to be accepted as a pony have already been referred to, and it may be added that the 14-h.-2-in. standard which now marks the line of distinction between the pony and the horse at most of the principal shows, is possibly not subscribed to by every breeder. But assuming that it is, and that there is a hard-and-fast rule making every animal under 15 hands a cob if he stands 14-h.-2-in. or over, and every one a pony if he does not reach the latter standard of height, difficulties almost innumerable still confront the writer who attempts to describe the points and conformation of a pony. This is mainly due to the existence of so many varieties of the breed, in behalf of all of which some special features of type are claimed by their respective admirers. Unfortunately, however, a writer is opposed by a still more serious obstacle that must be encountered, namely, the *divergence of opinions* that exists amongst the chief admirers and supporters of these different breeds. Doubtless this is in no small degree attributable to the fact that all sorts of undesirable and irregular crosses of blood have been introduced into each variety; partly as a result of mistaken theories that have been applied, and partly to the indifference of many persons whose first duty it should have been to have kept the particular variety of pony with which they were connected pure and free from any undesirable taint.

As suggested above, there is little doubt that the person who proposes to breed ponies, and to found a new stud upon raw material which he has succeeded in collecting hap-hazard from all the four points of the compass, will act wisely if at the commencement of his operations he trusts to the good offices of a Thoroughbred pony sire. There are plenty of these little horses to be picked up every year whose breeding is as good as that of any animal in the Stud-book; but valuable though they are as corner-stones in the establishment of a strain, it must always be borne in mind that there is a strong probability of their begetting stock that is taller than themselves, whilst they are not likely to introduce high action into their stock. Of course, the possibility of the former being the case is somewhat discounted by the fact that the foals they get will be out of small mares; but then, as in all likelihood the mares in question have been picked up here and there with little or no information as to pedigree, there may be the taint of size on their side, and if this is so, the appearance of big foals *at the commencement* of the operations might reasonably be expected. Still, as it is not within the power of everyone who proposes founding a stud, to buy his mares from well-established herds, the beginner is compelled to do the best he can for himself; and provided he possesses

the golden gift of patience, and can afford to wait a few years for the return of his money, he should eventually succeed, as others have succeeded before him.

Of course, if a person possesses the means, and is impatient to show profitable and satisfactory results, he can indulge at once in the luxury of procuring the best of blue-blooded pony mares and stallions; and unless his operations are attended by the most cruel luck, he can then start with almost a certainty of breeding good-looking foals that can be raised at a profit. On the other hand, the man who proposes to begin at the beginning, as other successful breeders have done before him, and who possesses both judgment and patience, should in the course of a few years show even better results, for though he will naturally have to wait longer for a return of his money, the profits will be proportionally higher in the end, and his stock will be increasing every year in value. On the contrary, if he starts with expensive animals he runs the risk of incurring severe losses by death, or having to pay large premiums for insurance; besides which, there cannot be so great an increase in the value of his stud as there would be if he commenced with lower-priced foundation stock and worked at it until the desired improvement had been effected. There is, moreover, the fact remaining that although his capital, or a great deal of it, should lie idle for a few years, the working expenses of a pony-breeding establishment are not very heavy, even if they are not actually insignificant. The rent of a hillside, a very appropriate situation for such a place, cannot possibly be more than a few shillings an acre; the necessary attendance upon the animals whilst they were upon it cannot be much, and the expenses of such additional forage as would be required in the winter and on certain special occasions will not be likely to amount to more than a comparatively small sum.

There is another point, moreover, for the pony-breeder to take into consideration before he commences operations, and this is the probability that exists of his always finding a market, and a ready one, for his surplus foals. This in itself should form no small inducement to a person who may be anxious to try his luck, as the prospect of having stock on hand which he is desirous of disposing of not infrequently acts as a deterrent to an intending breeder. There is always a demand for ponies, be they good-looking or only commoners, and therefore so long as the small tradesman and the costermonger exist, so long will a man be able to dispose of his culls, and such transactions should certainly yield some profit to the vendor. If the misfits can pay their own way, the profits on the better class of animal, not to mention the "cracks" when they begin to make their welcome appearance, will be considerable.

The introduction of a bit of blood into the newly-founded pony stud will be doubly valuable if high action is not sought for at the outset, for the superfluous males and the mares which are not considered good enough to keep for breeding purposes would assuredly command a readier market than many of the continental monstrosities which now find their way into the country to supply the home demand. No one would willingly invest his money in the purchase of a coarse underbred-looking animal with straight short pasterns if he could get hold of an active, symmetrical, wear-and-tear-looking pony with some approach to the type of what may be regarded as the correct one. Consequently an investment in a little Thoroughbred blood, it may be once more repeated, is of the highest importance to the founder of a stud of ponies brought together from all quarters. It is noticeable that some sires will always get foals bigger than they are themselves, and beyond the limit of height allotted to the pony, whilst others, happily for their owners, invariably produce smaller ones; so if the beginner is fortunate enough at the outset to procure a horse pony belonging to the latter category, which at the same time possesses the invaluable merit of impressing his own quality upon his foals, the path of that particular breeder will be a rosy one indeed.

In commencing pony-breeding there is one question that the speculator must always put to himself and answer before he sets to work. This is, what type of pony is it that he proposes to raise. In all other varieties of horse there are lines laid down to guide the operations of a breeder, as the standards are pretty well fixed; but in the case of the pony matters are somewhat mixed. It is not merely sufficient to try and produce a little horse; a breeder should have something more definite before him than that, or else his operations will be conducted on a happy-go-lucky method of progression which can only end in disappointment and disaster. Perhaps the most valuable and saleable type of pony is the Harness type, possessed of a high, free, and graceful action. Very few ponies, and especially the higher-priced ones, are required to gallop, the canter and the trot being the paces that are most affected by their owners. For the production of such as these the Hackney pony is, of course, the best of all sires to use in the first instance, provided always that his merits as a stock-getter are proportionate to his other qualifications. He should at all events be equal to the task of introducing action into his foals, and it is remarkable for how long this most essential "entity" will remain in a strain when once it becomes fairly rooted in it, which, by the way, it is sure to be in the case of closely inbred strains, such as those most pony-breeders now possess.

The Hackney sire of small stature, combined with action, finds many

friends amongst admirers of ponies, but the services of a sire possessed of Hackney blood to any considerable extent are apt to produce a heavier class of foal than those now in request. The fashion, of course, may change, and perhaps it will before long, as it is by no means improbable that a heavier breed and, on the whole, more powerful type of pony will be in demand. As it is, generally speaking, there is naturally far more action in the first cross Hackney than in the first cross Thoroughbred pony; and whilst the latter shows, as a rule, the more quality, the former possesses the greater amount of substance. The Hackney, it must always be borne in mind, is a trotter above all things and then a walker, whereas the Thoroughbred is a galloper, and it is only natural to expect that the inherent qualities of the sire in either instance will be transmitted to a greater or less extent to his offspring. Of course, the character and breeding of the mares—especially the breeding—will have a great deal to do with the appearance and value of the foals. That goes without saying, as otherwise the mares could be collected from all parts and merely selected by their looks, without any attention being paid to their ancestors; but in such a case it is to be feared that the success of the stud, if ever attained, would be delayed for many a year, as the foals would come season after season in all shapes and sizes; and unless a breeder can get hold of a "sorty" lot of mares, all bred on pretty much the same lines, he cannot reasonably expect anything like uniformity amongst their produce if they are all served by the same horse, as no doubt they would be for a season or two at least after the stud had been established.

This brings us once again to the all-important question of inbreeding, which has been alluded to above, when a reference was made to the remarkable successes of Mr. Christopher Wilson. Here, of course, lies one of the greatest secrets of the triumphs of that gentleman; but it must be remembered that when he "sibbed" so strongly he was only combining blood of which he thoroughly understood the properties. It is questionable, therefore, whether a person who starts a pony farm by collecting a herd of Dartmoor, or New Forest, or any other breed of mares, and crosses them with a Thoroughbred or Hackney pony sire, would be acting quite wisely if he determined to commence close inbreeding at once and to shut his eyes to the imperfections of his stock, or their approach or otherwise to the approved type. He may, of course, be fortunate in getting one or two youngsters of exactly the class he wants in the first or second season, and these he might breed together, and thus make good progress towards the goal he has in view; but the wise man will first of all try to establish the type he requires amongst his breeding stock, and when he has produced the material, and enough of it to work

upon, he will make no more experiments, but will inbreed to a greater or less extent until he has possessed himself of a herd of ponies of the required shape and make. By this it is not intended to convey the meaning that a series of first or second crosses must result in a breeder getting what he wants. On the contrary, some time may be required ere he can possess himself of the number of foundation stock necessary to his purpose. At the same time, if it clearly appears to him that his stallion does not suit his mares, and that the crossing and recrossing is not advancing him much along the road he wants to travel, he will be foolish to persevere in it, and if he is wise he will commence again. In the case of the first foals bred from "native" mares—the term "native" may be accepted as applicable to the more or less pure-bred mares of some old established variety that have been purchased as foundation stock—and the Hackney or Thoroughbred sire, it will be best to cross them with their sire; but sooner or later—and probably sooner—it will be necessary to find a stallion of their own breeding, else in time the original pony blood will be absorbed by that of the Thoroughbred or Hackney, as the case may be, and all traces of the original pony will be obliterated. Consequently breeders must bear in mind that if they desire to found a strain that shall make a name for itself, their stock must be something different from either bantam Thoroughbreds or bantam Hackneys, though participating in the best qualities of the one or the other, whichever may be used.

The services of a "native" sire may perhaps be resorted to by some owners in certain instances; but a difficulty will always exist in discovering an animal of unimpeachable pedigree which also fulfils the requirements of a breeder in other essential points. The fact is, as stated above, that the "commoners" who have for centuries possessed the privilege of grazing their ponies on common land, have not been careful in protecting their property, the result being that many good mares have accidentally been served by unent two-year-olds of an indifferent character, whilst many quite undesirable entire horses have been permitted to roam about the land, and work destruction amongst the different herds. Of late years the indigenous stock—or what remains, if any, of it—has received some attention, but the assistance has come so late that many reputedly pure-bred ponies of a certain variety are simply improvements upon the mongrels that have been produced in the course of a long period of neglect. It therefore appears that the founder of a pony-breeding stud may be acting more wisely in relying upon a Thoroughbred or Hackney-bred sire in the first instance — provided he cannot produce a stallion of the Wilson, or some other established strain—than

upon a pony which may be all he is described as regards looks, but which, on the other hand, may be full of most undesirable blood. In the case of mares it is a different matter. A beginner would be unfortunate indeed if all his investments in foundation stock turned out worthless; but it may be remembered that each mare stands or falls to a certain extent upon her own merits, whereas a sire possessing a bar sinister in his pedigree is liable to injure the produce of every mare he serves, in fact there is no limit at all to the mischief such a horse may create in a stud.

Regarding the native breeds of ponies which have existed—or in some cases still exist in a more or less modified form—in certain parts of the kingdom, it may be said that the efforts that have been made to rescue them from extinction have met with fairly satisfactory success, though unhappily great mischief has been accomplished through injudicious crosses. The best-known varieties of pony will now be briefly dealt with, beginning with—

The Dartmoor.—Almost from time immemorial the Dartmoor ponies have been highly thought of, but, like many other kindred breeds, they have suffered to a certain extent by the apathy of those whose first consideration their welfare should have been. The region of Dartmoor embraces an area of some 20,000 acres, the chief portion of which is included in the Duchy of Cornwall, and consequently belongs to H.R.H. the Prince of Wales. The rights of common are let by the Duchy, and there are also some manorial rights of pasturage. At one time it was laid down that no stallion exceeding 12 hands high should be permitted to run on the famous moor, the duty of supervising the Forest and its occupants being relegated to a family of "moormen", who succeeded to the office from generation to generation. Many owners of the ponies, and to their credit be it said, have attempted from time to time to improve the race, the services of a Thoroughbred sire of as diminutive proportions as could possibly be obtained being usually the animal selected for the purpose. There is very little doubt, too, that Arabs have been tried as crosses for the Dartmoors, with questionable results, as there has always existed a disbelief in the minds of breeders as to whether the constitution of these sons of the desert would stand the rigours of a winter on the moor, the climate of which at times is most inclement. At the present time many good ponies come from Princetown, being raised by some of the officials connected with the convict establishment which is situated there. Although the breed has become a good deal mixed here and elsewhere by crosses with Exmoor, Pack-horse, and other blood, there are many excellent ponies to be found in the neighbourhood, and enthusiasts believe that by the enterprise of pony-breeders the improved

Dartmoor will, in course of time, multiply and become more generally distributed throughout the country. In this respect the modern breeders will only be following the example of a little band of energetic pony-lovers, who laboured hard to introduce stamina and quality into their herds, but, as suggested above, the great difficulty that invariably presented itself was the acquisition of a suitable cross-bred pony that was small enough to be turned out with the native mares.

Perhaps the best known breeders of the past were a well-to-do farmer named Elliot, known as Lord Elliot, owing to the fact that he was lord of the manor of Brent, and Mr. John King, who possessed a herd of ponies that ran upon the Buckfastleigh moors. The former died about the year 1860, and many of his stock came into the possession of Mr. Hamblin of Buckfastleigh, where their offspring are no doubt to be found at the present time.

Probably the best representatives of the Dartmoor pony more closely resemble the pocket edition of the Hunter than any other variety of the equine bantam tribe. They certainly might display a greater amount of quality about their heads, but their shoulders, as a rule, could not be improved upon, whilst their weight-carrying capacity and powers of endurance are extremely great. Being ponies of a most robust constitution, they can rough it anywhere; they are wonderful stayers, and excellent in both harness and saddle when they have not been ruined by injudicious crosses. As regards their fore-legs and feet, they are excellent, though in the eyes of some judges they might be a trifle heavier in bone; but lightness below the knee in the case of a showy, blood-like looking pony is a very venial fault, whilst it may be added that appearances are very often deceptive, and the little horses are frequently far heavier below the knee than they appear to be.

The chief point that is unsightly in the composition of the Dartmoor pony lies in the direction of the quarters. Here, besides being wanting in length, they not infrequently droop, disturbing the otherwise elegant top line and symmetry of the whole. Cow-hocked specimens are unfortunately to be found in too many instances, and no doubt this defect is a great cause of trial and disappointment to breeders who are desirous of raising good-looking stock for the market. There is, however, consolation to be derived from the knowledge that, even if a pony possesses such defects, the cost of his production is so small that a very fair margin of profit may still remain after he is disposed of. The ears of the Dartmoor are rather large for a pony whose height should not at the utmost exceed 13 hands, but they are characteristic of the variety and must be accepted as such.

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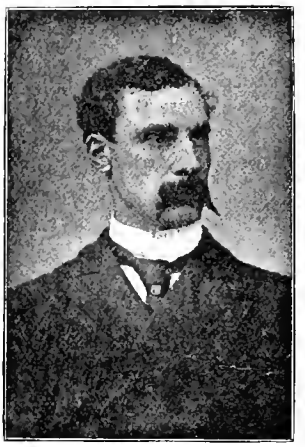

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Briefly, **the object of Prof. Davis's work** is to give in a readable form and in non-technical language a general survey of the whole animal world from the stand-point of modern science—and the work may fairly claim to be a **Natural History on a new plan**, the first comprehensive work in English of its own special kind. Formerly Natural History had much the character of a miscellaneous aggregate of disconnected facts, but hardly any fact or feature connected with any animal can now be considered as isolated from others; and animals as a whole must be looked upon as interrelated in the most surprising manner both with one another and with their surroundings.

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To teachers THE NATURAL HISTORY OF ANIMALS may be regarded as indispensable. More than usual attention has of late been directed to the important subject of **Nature-study**; and in this respect the appearance of Prof. Davis's work could scarcely have been more fitly timed. In the domain of Natural History it is pre-eminently the book for the purpose. Its clear and orderly arrangement of facts, its masterly grasp of general principles, its comprehensiveness of scope and simplicity of style, combined with the most absolute scientific accuracy, render this work an invaluable book of reference for those who aspire to teach Nature-study on up-to-date principles.

The Illustrations, as befits a work of such importance, are on the most lavish scale. A large number are in colour, reproductions, by the latest processes of colour engraving, of exquisite pictures by the most eminent animal draughtsmen. In illustrating the work talent has been sought wherever it was to be found, and the list of artists is representative of several nationalities. A large number of the designs are the work of Mr. A. FAIRFAX MUCKLEY, who is probably unsurpassed in the capacity to depict living creatures with absolute fidelity to detail without sacrificing the general artistic effect. FRIEDRICH SPECHT, one of the most eminent German animal painters of the past century, is represented in THE NATURAL HISTORY OF ANIMALS by many of his best designs in colour and black-and-white. W. KUHNERT, another German artist whose work is universally admired; and M. A. KOEKKOEK, the talented Dutch painter, are also among those who have assisted in the embellishment of the work. An important feature is the series of diagrammatic designs showing the structure of certain typical animals, specially drawn under the direction of Prof. Davis.

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The Modern Carpenter, Joiner, and Cabinet-Maker:

A Complete Guide to Current Practice. Prepared under the editorship of G. LISTER SUTCLIFFE, Architect, Associate of the Royal Institute of British Architects, Member of the Sanitary Institute, editor and joint-author of "Modern House-Construction", author of "Concrete: Its Nature and Uses", &c. With contributions from many specialists. Illustrated by a series of about 100 separately-printed plates and 1000 figures in the text. In 8 divisional volumes, super-royal quarto, handsomely bound in cloth, with cover design by Mr. TALWIN MORRIS; also in 2 volumes, Roxburgh binding. In complete sets only.

In preparing THE MODERN CARPENTER the editor has had the great advantage of working upon the basis of Newlands's *Carpenter and Joiner's Assistant*, which for nearly half a century has been accepted as a **standard authority** on the subjects of which it treats, and for many years has been recommended by the Royal Institute of British Architects as **a text-book** for the examination of that society. And yet in the present work it has been possible to preserve only a very small part of Newlands's treatise, invaluable though this has been to two generations of craftsmen. While the fundamental features of arrangement and method which distinguish this famous work have been retained, the matter has had to be **entirely rewritten**, and many new sections have been added, on subjects not touched upon in the older work, with which the carpenter of the present day requires to be familiar.

In the new book, indeed, the old foundations that have stood the test of half a century of practical use have been retained, but **the superstructure is wholly new.**

The lesson to be learned from this fact is not far to seek. It is that the modern carpenter requires a **far wider expert knowledge** than sufficed his predecessor. The development of wood-working machinery, the introduction of new kinds of timber, improvements in the design of structures, the more thorough testing of timbers, and progress in the various industries with which Carpentry, Joinery, and Cabinet-making are intimately allied, have all helped to render the craft more complex. The carpenter of the present day has no use for the old "rule of thumb" methods; his calling is both an art and a science, and **knowledge, knowledge, and again knowledge** is the primary condition of success.

The editor of THE MODERN CARPENTER, **Mr. G. Lister Sutcliffe,** Associate of the Royal Institute of Architects, **needs no introduction** to practical men; his name is already well known not only through his professional position in the architectural world, but through his editorship of *Modern House-Construction*, a work which, although issued only a few years ago, has already become a standard book of reference. Mr. SUTCLIFFE'S large experience has enabled him to enlist the services of a **highly-qualified staff of experts,** whose special knowledge, acquired through long years of practical work, is now placed at the disposal of every member of the craft. The first condition in selecting the contributors to the work was that they should be **practical men,** not only possessing the indispensable knowledge, but having the ability to impart it. The result is that within the eight divisional-volumes of this work we have a treatise on every branch of the craft, distinguished by four outstanding qualities:—It is (1) **complete,** (2) **clear,** (3) **practical,** and (4) **up-to-date.**

An idea of the scope of THE MODERN CARPENTER may be gathered from the fact that while its predecessor, *The Carpenter and Joiner's Assistant*, comprised only **eight** sections, the new work includes no fewer than **sixteen.** A glance at these will show that the work **covers the whole field**; it is a complete encyclopædia upon every subject that bears upon the everyday work of the practical man.

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